# PHOCUS LCD 30WMS

MODEL

SERVICE MANUAL

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# SAFETY PRECAUTIONS

## GENERAL GUIDELINES

1. Always use the manufacturer's replacement safety components. The critical safety components marked with ▽ on the schematics diagrams should not be by other substitutes. Other substitute may create the electrical shock , fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred , replace those components that indicate evidence of overheating.

2. After servicing , see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.

3. When the receiver is not being used for a long time of period of time , unplug the power cord of the Adaptor from the AC outlet.

*Color TFT LCD Module is very sensitive both electrically and physically.Users, therefore, are requested to follow the "Guidance of handling color TFT LCD Module"on the followings.*

**1 - Be careful not to make scratch on the polarizer.**

Surface of polarizer is soft and can be physically damaged easily.
Please do not touch, push or rub polarizer surface with materials over HB hardness.

**2 - Keep clean the surface.**

Please wear rubber glove when touch the surface of LCD screen. Please use soft and anti-static material as cleaner.

**3 - Keep out of water.**

Water on/in the LCD may cause electrical short or corrosion. Please wipe out dry or water carefully.

**4 - Prevent swift Temperature & Humidity change.**

Instantaneous temperature and/or humidity change can make dew or ice which cause nonconformance such as malfunction.

**5 High temperature & high humidity reduce the life-time.**

LCD is not proper to be used at high temperature and high humidity. Please keep specified temperature and humidity condition.

**6 - Keep out of Corrosive Gas.**

Corrosive gas effect the polarizer and the circuit chemically and cause defects accordingly.

**7 - Electrostatic discharge can make Damage**

There are electro-static sensitive components such as CMOS in LCD Module. Please earth human body when handle the LCD.In addition, please do not touch the interface connector pin with bare.

**8 - Do not operate for a long time under the same pattern**

Operating LCD for a long time under the same pattern can cause image persistence and can damage it. Please follow following guidance.
1. Turn the power off when do not use.
2. Change the pattern periodically.

# TECHNICAL SPECIFICATIONS

| | | |
|---|---|---|
| Power source | 15VDC , 4.5A | |
| | Adaptor input 100-250VAC 50/60Hz | |
| Aerial Impedance | 75Ohm, Coaxial Type | |
| Receiving System | PAL SECAM BG | |
| | PAL SECAM BG DK | |
| | PAL I | |
| | PAL SECAM BG LL' | |
| | NTSC (4.43,3.58) tru Scart | |
| Receiving channels | VHF I Band, CH2-4 | |
| | VHF III Band, CH5-12 | |
| | CABLE Band, S1-S41 | |
| | UHF Band, CH21-69 | |
| TFT LCD Panel | Screen diagonal | 20.1 inch |
| | Display area | 408(H) X 306(V) mm |
| | Number of Pixel | 640 X 480 Pixel |
| | Display Colors | 16.7 million color |
| | Response Time | 11ms (typ.) |
| | Contrast ratio | 450:1 |
| | Brightness | 450 Cd/m2 |
| | Viewing angle | 80h / 75v |
| | Pixel pitch | 0.6375 mm X 06375 mm |
| | Back Light | 6 CCFT |
| Teletext | Text, Fastext, Toptext | |
| | Page memory 100 | |
| External Connections | Standard VGA Connector | VGA resolution, 56-85Hz Vertical |
| | AV1 (AV in-out and RGB connection) | |
| | AV2 (AV in-out) | |
| | AV3 (AV input from cinch connector) | optional |
| | AVS (SVHS input) | optional |
| | Audio line outputs (cinch connector) | |
| Audio Outputs | 2X3W RMS Audio output (at %10 THD) | |
| | Stereo Headphone | |
| | A2 stereo, Nicam | |
| Power Consumption | 70W | |
| | 2.5W at Stand by | |

# Getting started

Remove your Television carefully from the box. You may wish to store the packaging for future use.

## In the box

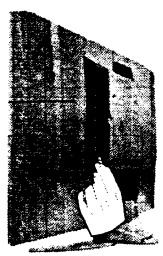
Inside the cartoon box you should have:

- Accessories box
- Power cord
- Adapter
- Remote control
- Batteries

**Read these instructions before use.**

## Aerial connection

To connect an aerial, plug the aerial lead into the aerial socket on the rear of the TV.



You can use an outdoor or indoor aerial. However, if you use an indoor aerial the quality of the reception may be reduced and adjustment of the aerial may be required when changing programs.

**Please note**

If you live in a poor reception area or use an indoor aerial you may experience loss or corruption of teletext transmissions.

## Switching on and First Use

**1.** Connect the power cord to the mains plug.
**2.** Connect the input socket of the adapter to the 15 V DC socket at the back panel of the LCD TV.
**3.** Connect adapter to the mains plug.

**Note 1:** Your TV will move to stand-by mode in five minutes when there is no broadcast signal.
**Note 2:** Your TV is equipned to operate with front panel buttons, "MENU", "PR+", "PR-", "+", "-" in case your R/C is broken or you run out of batteries.

**Please Note**

When not in use disconnect the plug from the mains power supply.

**4.** Press the **Power** button on the front of the TV. The standby indicator will illuminate.

**5.** Press a **Numeric** button or the **Program up** or **Program down** button on the remote handset or **Program up, Program down** or **MENU** button on the front panel to switch the TV on.

The standby indicator remains on. The picture will appear after a few seconds.

Press the **Standby** button to switch the TV to standby. The standby indicator will brighter.

**Please Note**

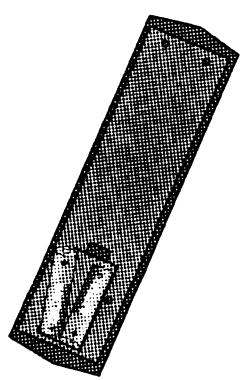
Do not leave the television on standby unattended or overnight.

**Switching the TV on for the first time**

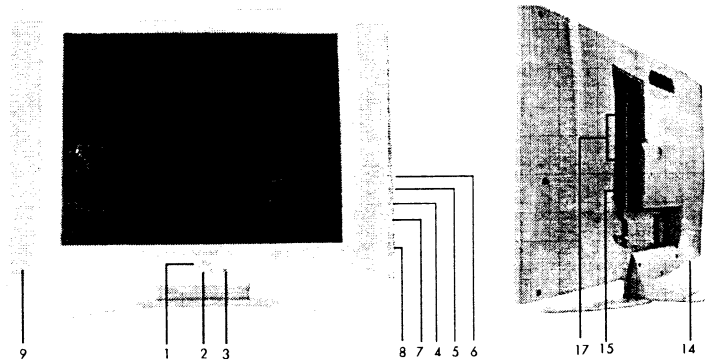
To install your TV, please read the sections "TV controls" and " Tuning the television".

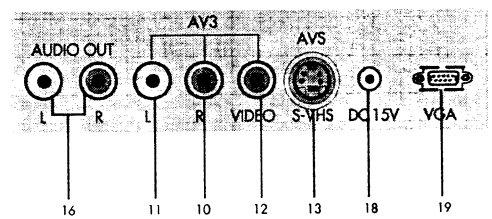
## Battery fitting

Insert the 2 AAA Batteries supplied into the compartment on the rear of the remote control, ensure you follow the polarity diagram inside the compartment.



# Control Unit




1. Stand-by
2. Power on / off
3. Remote control
4. Menu button
5. Volume up
6. Volume down
7. Program up
8. Program down
9. Speaker
10. Audio RCA (R)
11. Audio RCA (L)
12. Video input CINCH connector
13. S-VHS
14. Headphone
15. Antenna input
16. Audio out (R,L)
17. 2 Scart
18. DC 15V Power supply input
19. VGA

**Please note**

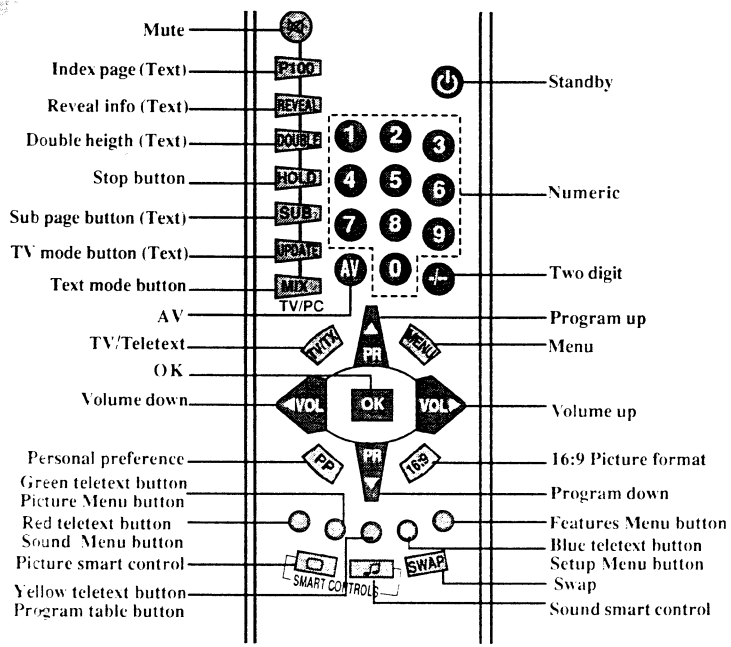
- See the external connections table on next page for avaible connections.
- Do not use Video RCA and S-Video connections at the same time, otherwise they will effect the picture each other.
- RGB inputs from scart will give you better picture quality.

## External connections table

| | |
|---|---|
| Picture tube size/type | 20" 4:3 |
| AV1 Scart | STD. |
| AV2 Scart | STD. |
| Headphone socket | STD. |
| Audio/Video RCA | STD. |
| S-Video socket | STD. |
| Back audio out | STD. |

STD : Standart
OPT : Optional
N/A : Not available

## Remote control




# Using the TV

## Turning on for the first time and Tuning

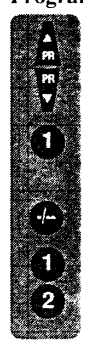
### TV controls

**Stand-By mode**

When your TV is working on, press the red "STAND-BY" button on the right upper corner of your remote control to switch off and the Stand-By indicator (Led) will be brighter. To turn on your TV again, press one off the numaric buttons, **Program up** or **Program down**.

**Please Note:** If you will not use your TV for a long time, do not leave it on Stand-By mode, instead switch it off from the power button on the front panel of the TV set.

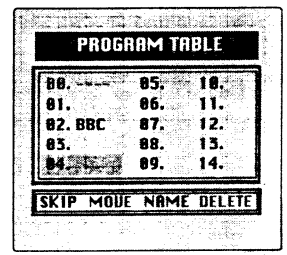
**Programme selection**



Press the **Program up** or **Program down** buttons on the TV or remote control or press a **Numeric** button to select a programme.

To select a programme whose number is greater than 9 using the numeric buttons, press the **-/--** button first and then press the two **Numeric** buttons. For example, to select programme 12, press the **-/--** button followed by **1** and then **2**.

You can also select a program by pressing in the Yellow button to see the Program Table.




Use the **Program up** and **Program down** buttons to scroll through the programme numbers. When you find the program number you want press the **OK** button again.

Press the **TV/TX** button to close the Program Table.

**Volume**

Press the **Volume +** or **Volume -** button on the TV or the **Vol▭** or **Vol▭** button on the remote control. A sound level bar will appear on the screen.

**Mute**

To mute the sound press the **Mute** button on the remote control. A loudspeaker symbol will appear on the screen.


Press the **Mute** button again to restore the sound. The symbol will disappear.

Pressing **Volume up** buttons will also restore the sound. But pressing the **Volume down** button will decrease the volume without restoring.

**PP**


Personal preference. Press the **PP** button to revert to the default settings for the TV. (See TV setup).

**Swap**


Select the programme you would like to recall by pressing **SWAP** button. Selected programme number will appear on the lower left side of the screen. While watching any programme, you can recall the selected one by pressing **SWAP** button again. If you press swap button again you can recall the last programme you watched. You can cancel SWAP function by pressing **MENU** button.

*PR 01 ➡ (SWAP) PR 11 ➡ PR 12 ➡ PR 13...➡ (SWAP) PR 01*

**AV**


Your TV has 2 scarts so every time you press your AV button, your input will change as follows:

1 AV1 when using SCART socket 1 (RGB support).
2 AV2 when using SCART socket 2.
3 AV3 when using the RCA sockets of the TV.
4 AVS when using the S-video socket.


Press the **AV** button again to return to TV.

# Tuning the television

There are two ways of tuning your television:
Manual, where you control the tuning process
or
Autoprogram where the television does it all automatically.

Your TV will sort all the channels with the ATS. Sorting will be performed in the following order:

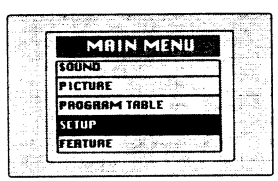
**a-** Selected country's channels with teletext and channel names.
**b-** Selected country's channels with teletext and without channel names.
**c-** Selected country's channels without teletext.
**d-** Foreign channels with teletext and channel names.

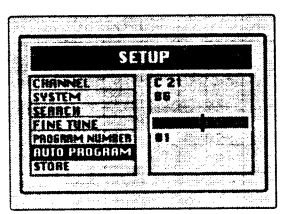
**Please Note**
If the TV is set to a channel with no signal the TV will return to standby in 5 minutes. The last minute remaining is displayed on the screen.

**Automatic tuning (Autoprogram)**

There are two ways to access the SETUP menu:


Press the blue **Setup** button.
or
Press the **Menu** button and use the **Program down** button to select SETUP. Press the **OK** button to enter the SETUP menu.




**Please note**
The system will be displayed automatically on SYSTEM row i.e.BG, L, I or DK depending the receiving broadcasting system of your country. In some countries the broadcasting system can be both in BG/DK or BG/LL´. Only the TV sets produced with Pal Secam BG/DK or Pal Secam BG/LL´ systems can receive both BG/DK or BG/LL´ broadcasts. In this case the user can select the required SYSTEM using **Volume up/down** buttons.

**Please note**
If you do not press any buttons for 15 seconds the TV will exit the menu system.


Use the Program down button to select AUTOPROGRAM and press the OK button. A list of countries will appear. Select the desired country using **Program** and **Volume** buttons.


When you are sure the aerial is connected properly press the **OK** button. Autoprogam will start.

To cancel Autoprogram whilst it is working press the **Menu** button repetitively.

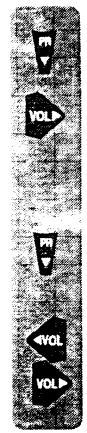
As Autoprogram stores a channel it will appear briefly on the screen before the search continues.

**Your TV is now tuned and ready to use.**

**Please note:**

If auto sort fails to arrange the programmes in the required sequence please refer to programme organising.

**Manual tuning**
If you want to tune manually:



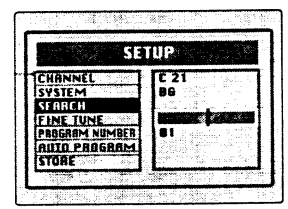

In the Setup menu select PROGRAM NO using the **Program down** button and use the **Volume up** button to change the Program No to 01.

Starting with Program 01, tune in the first channel as follows:

Use the **Program down** button to select SEARCH.

Press the **Volume up** or **Volume down** button to start the tuning search.

When the search finds a strong channel signal it will stop searching. The picture will appear.





Use the **Program down** button to select PROGRAM NO.

Use the **Volume up/down** or numeric buttons to select the desired programme number.

Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

Use the **Program up** button to select again SEARCH and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

**Tuning with channel numbers**
Enter the SETUP menu by pressing the blue button.


Press **OK** button when CHANNEL row is blue.

Use OK button to select "S" for cable channels and "C" for terrestrial broadcast.

Enter the channel number using the Numeric buttons or use the **Volume up/down** buttons to tune channels.

Use the **Program down** button to select PROGRAM NUMBER.

Use the **Volume up/down** or numeric buttons to select the desired programme number.

Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

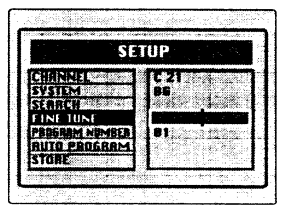
Use the **Program up** button to select again CHANNEL and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.


To exit the SETUP menu press the TV/TX button.

**Fine tuning**
Although the search and Autoprogram will automatically try and tune to the best reception, in areas of poor reception a bit of fine tuning may be required.


In the SETUP menu use the Program up/down buttons to select FINE TUNING. Use the Volume up and Volume down buttons to fine tune.

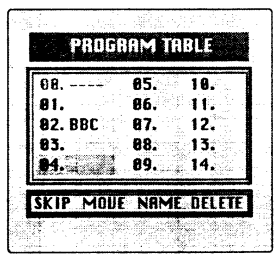
When you have finished use the **Program down** button to select STORE and press the **OK** button.




# Program organising

Once you have tuned in all the channels you want, you can change their programme number, if required, and name them.


To enter the PROGRAM TABLE menu press the **Menu** button and select PROGRAM TABLE and press the **OK** button or press directly the **Yellow** button.




The buttons used to edit the programs are shown at the bottom of the display:

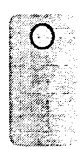
| | | |
|---|---|---|
| Blue button | - | Name |
| Green button | - | Move |
| Pink button | - | Delete |
| Red button | - | Skip |

**To name the programmes**


You can name the programmes and AV inputs.

Press the Blue button, the selected programme will be highlighted.

Use the **Program up** and **Program down** buttons to select the letters and numbers and the **Volume up** and **Volume down** buttons to move through the name.



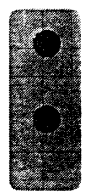
Press the **Blue** button again to store the name.

Repeat this process to name all the programmes.

**Please Note**
1. Some TV channels may send their names with teletext transmission. In this case their names will be automatically shown on the name line.

1. Child locked programmes will be shown as "🔒"

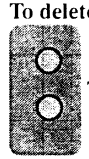
**To move the programmes**
You can move the programmes around the programme list to the order you want



Select the programme you want to move and press the **Green button.** The programme will turn to yellow. Select the number you want to move and press the **Green button** again and the programme will be moved to that number.

All the following programmes are shifted down by one place.

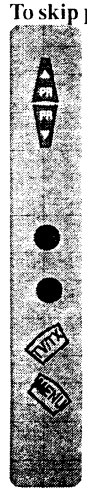
**To delete a programme**



To delete a programme, select it and press the **Pink** button.
The programme will be deleted.

All the following programmes are shifted up by one position.

**To skip programmes**




Skipped programmes will not appear when you move through the program list using the **Program up**/ **Program down** buttons.
They can still be selected using the numeric buttons or the OK button.

Select the programs you want to skip and press the **Red** button. The program will turn red. To unskip the program press the **Red** button again.

To exit the PROGRAM EDIT press the **TV/TX** button once or the **Menu** button twice.

When you select a programme, the information you entered in the PROGRAM EDIT menu will appear on the top of the screen i.e. P1 BBC1. This will disappear after about three seconds.

# TV set up

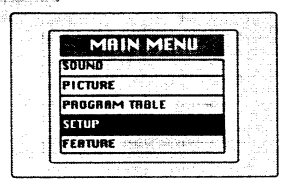
The TV set up is accessed through a menu system.

Once you have stored your set up, this is the set up the TV will default to when you switch it on.


To enter the MAIN menu press the **Menu** button.

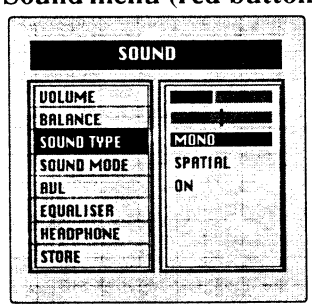
Once in the MAIN menu use the **Program up** and **Program down** buttons to select items in the menu and the **OK** to access sub menus **or** use the coloured fastext buttons for quick access.

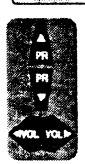
Red button - SOUND
Green button - PICTURE
Pink button - FEATURES




**Please note**
If you do not press any buttons for 15 seconds the TV will exit the menu system.

## Sound menu (red button)




Select the required item in the menu using the **Program up/down** buttons and make the changes pressing **Volume up/down** buttons. Use the OK button to enter HEADPHONE from main menu.

**Volume**
Sets default volume using the **Volume up** and **down** buttons.


To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

**Balance**


Sets the sound balance mode using the **Volume up** and **down** buttons

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

**Sound type**
This item shows STEREO when receiving stereo transmission and MONO for mono transmissions.

The TV can be produced to receive the NICAM broadcasts as a optional feature.

If the channel you are watching is in Nicam stereo the On Screen Display will show NICAM STEREO for a while.

**Please Note**
If, while watching a nicam stereo channel, the signal strength drops and the system cannot receive nicam stereo the OSD will show MONO. If the signal strength increases again and nicam stereo can be received again, the OSD will show NICAM STEREO.

**Dual I/II**
Some broadcasters supply the programmes in two languages. To able to listen the second language select DUAL II by SOUND TYPE using **Volume up/down** buttons.


To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

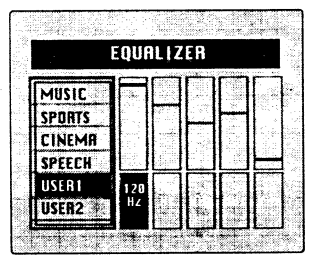
**Sound mode**
You can select NORMAL or SPATIAL **Volume up/down** buttons.

SPATIAL sound is an 'expanded stereo'. It gives the impression that the two speakers in the TV are further apart than they really are.

**AVL**
TV transmitters have different sound levels. AVL (automatic volume limiting) maintains the same sound level as you switch from program to program.
To apply this press **Volume up** or **down** button and select **ON** for **AVL** in **Sound Features** menu.

**Equalizer**

To access the 5 band equalizer menu press **Volume up** or **down** button and press **OK** on the **Equalizer** line.




In this menu there are a series of preset equalizer settings for different types of sound output.
There are four music settings - MUSIC, SPORTS, CINEMA, SPEECH and USER1 & USER2 modes.

MUSIC, SPORTS, CINEMA, SPEECH are factory presets.

USER modes allow you to set your own sound outputs as follows:


Press the OK button to enter the EQUALIZER menu.

Use the **Program down** button to select USER1.

Press OK button to adjust the frequency band levels.

Use the **Volume up** button to select the KHz column you want to change.

Use the **Program up/down** buttons to make the changes.

To save your settings, press the **OK** button. Press the **Menu** button to go back to the previous menu.

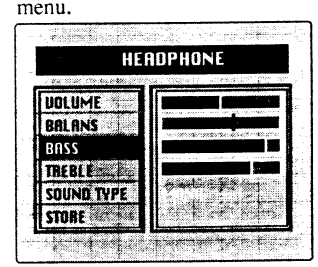
You can also adjust the settings of USER2 by the same method.

You can change the equalizer setting whilst watching the TV using the sound Smart control.

Press the sound **Smart control** to page through the different equalizer settings and select the one you want.

Once you have switched the TV off the equalizer setting will revert to the stored setting.

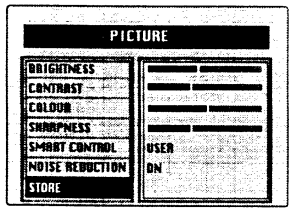
**Headphone**
You can set up the volume, balance, bass treble and sound type (stereo or mono) of the headphone output.
Use **OK** button to enter the HEADPHONE menu.





To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menü.

## Picture menu (Green button)




The picture menu allows you to set up the following:
BRIGHTNESS
CONTRAST
COLOUR
SHARPNESS
SMART CONTROL
and NOISE REDUCTION


To change, for example, the colour, select it using **Program up** and **down** buttons.

Use the **Volume up** and **Volume down** buttons to change the setting.

To save your settings, select STORE and press the **OK** button. STORED will be displayed.

These settings are stored as USER picture type.

You can change the picture type whilst watching the TV using the picture Smart to control.

Press the picture **Smart control** page through the different picture types and select the one you want: SOFT, NATURAL, RICH or USER.

**NOISE REDUCTION:** You can reduce the noise effects in the pictures by selecting ON.


To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

## Features Menu (Purple button)

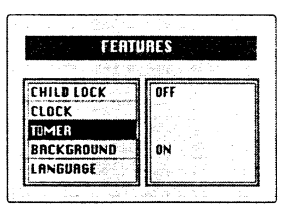

To select **Features** menu press the menu button and using the **Program up** and **down** buttons select **Features**.

You can also select the **Features** menu directly by pressing the **purple** button on the remote control.

The **Features** menu allows you to set up the following:

CHILD LOCK
CLOCK
TIMER
BACKROUND
LANGUAGE


Use the **Program up** and **down** buttons to select the feature you wish to change and use **Volume up** and **down** buttons to adjust this feature.





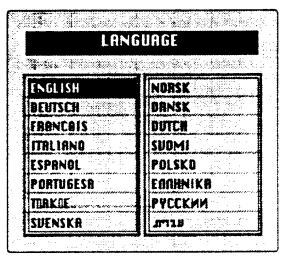
**Child Lock:** Using the **Child Lock**, you can lock any Program you want so that adult channels can not be watched by children.

You can cancel child lock any time you want. To cancel **Child Lock**, select **Child Lock** as OFF when you are watching that program.


**Clock:** Use the numeric buttons to set the real time.

**Note:** If you enter any channel with teletext transmission, clock will automatically set to real time.

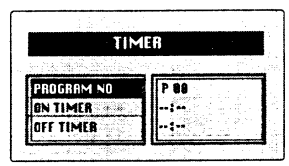
**Background:** You can adjust the menu background as ON or OFF.




**Language:** You can select one of the 16 languages by pressing OK button in the language selection.

**Timer:** Use **Program up** and **down** buttons to select **Timer** in the features menu. Using the Timer fuction, you can switch to a specific programme at a pre-programmed time or you can turn your TV off at the time you want your TV to be turned off.

Press OK to access the **Timer** menu.




**On Timer:** Use the numeric buttons to **set** the time that you want your TV to be turned on (TV should be on stand-by mode).

**Off Timer:** Use the numeric buttons to set the time that you want your TV to be turned off (Stand-by mode).

**Program No:** Use the numeric buttons to set the programme number that will be shown when you set the **On Time**.

# Using Teletext

Teletext is an information system that displays text on your TV screen. Using the teletext control buttons you can view pages of information that are listed in the teletext index.

**Please Note**
No on screen display is available in text mode. The contrast, brightness and colour cannot be changed but the volume control is still available.

**To enter Text mode**

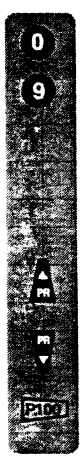
**Please Note**
Make sure the TV channel you are watching transmits teletext. If not NO TEXT sign will be shown on the screen.


Press the **TV/TEXT** button. The text page will appear, normally the index page.

**To exit Text mode**


Press the **TV/TXT** button. The TV will return to the channel you were watching.

**To select a page of text**




Find the number of the page in the index and enter it using the **Numeric** buttons. The number of the page will appear in the top left hand corner of the screen.

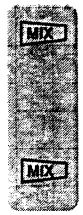
The page counter will search for your page. When it finds it, the page will be displayed.

To move to the next page of text press the **Program up** button.

To move to the previous page press the **Program down** button.

To return to the index page press the **P100** button.

**TV/text mix**




To view a page of text whilst watching a TV programme press the **MIX** button. The text will be superimposed over the TV programme.

Press the **MIX** button again to return to the text page.

**Page search whilst watching TV**


In Text mode press the Update button. The TV will return to TV mode with the text page number in the top left hand corner of the screen.

Enter the page number you want using the **Numeric** buttons.

The top line of the text page will appear whilst the text searches for your page. When the page is found the number will remain in the top left hand corner of the screen.

Press the **Update** button to view your selected page of text.

**Double height text**

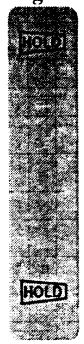

If you have difficulty reading the text on the TV you can double the height of the text.

Press the **Double height** button. The top half of the page will be displayed in double height text.

Press the **Double height** button again. The bottom half of the page will be displayed in double height text.

Press the **Double height** button again to return to the full page.

**Page Stop**




If the page of text you have selected contains sub pages, these sub pages will automatically be displayed in order with a delay to allow you to read the page.

To stop the move to the next sub page press the **STOP** button. STOP will appear in the top left hand corner.

To continue moving through the sub pages press the **STOP** button again.

**To select a sub page**


If the page of text you are viewing contains sub pages, the number of the sub page you are on and the total number of sub pages is displayed on the right of the screen i.e. 1/7.

To select a sub page press the **SUB** button. Press green button to select next sub-page or prees red button to select previous sub-page.

Enter the number of the sub page, using the **Numeric** buttons in the format S0001 for sub page 1.

The teletext will search for the sub page. This may take some time. To return to the TV whilst the teletext is searching press the **Update** button.

When the page number is found it will appear in the top left hand corner of the screen.

Press the **Update** button again to view the text page.

**To reveal information**


Press the **Rev** button to reveal concealed information (quiz answers etc.).

Press the **Rev** button again to conceal the information again.

**Clock**


Press the **Sub** button, whilst watching a TV program , to display the time.

**Fast text**

At the bottom of the teletext screen is a row of subject headings in red, green yellow and blue.

The remote control has a row of coloured buttons corresponding to the row of coloured subjects on the screen.

Pressing one of the coloured buttons will take you directly to the page corresponding to the subject heading.

# Connecting external equipment

You can connect a wide range of audio and video equipment to your TV.

## Connecting a video recorder

**① Via SCART**
Make sure the TV and video recorder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the video recorder and the other end into one of the SCART sockets on the back of the TV.

Switch on the video recorder and the TV.


Press the AV button on the remote control to select AV1 or AV2 to correspond with the SCART socket you are using on the back of the TV.

**Please note:**
You can connect a RGB external equipment via Scart. It is necessary to you use full Scart cable for this purpose.

Select the video outputs of external device by using its menu to RGB if it's avaible.

**② Via RCA lead (optional)**
Make sure the TV and video recorder are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the video recorder and plug the other end into the video and audio in sockets of the TV.

If the sound is in mono use the Audio Input L. In the SOUND menu select MONO.

**③ Via aerial socket**
Make sure the TV and video recorder are both switched off.

Unplug the aerial lead form the TV and plug it into the aerial socket on the video recorder (if fitted).

Plug a coaxial plug into the RF out socket on the rear of the video recorder and plug the other end into the aerial socket of the TV.

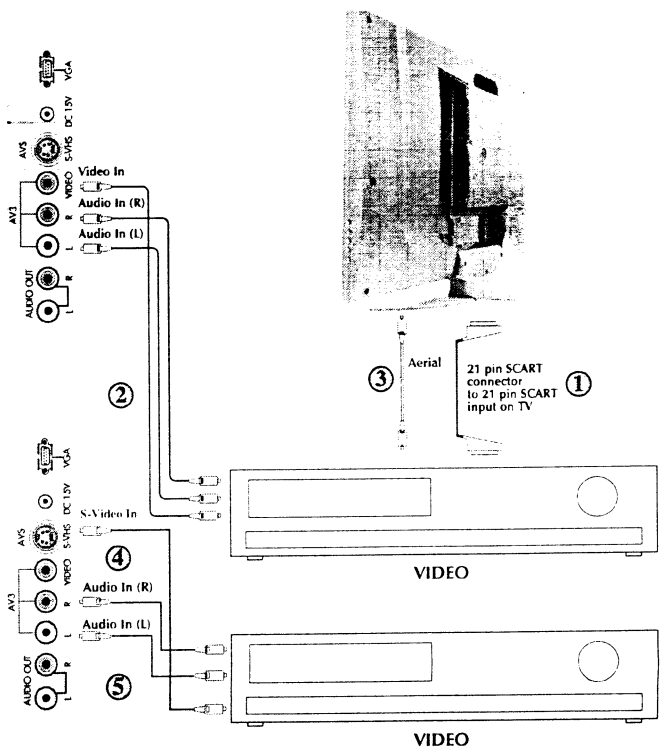
Switch on the video recorder and the TV.

If your video recorder has a test signal, switch it on. (Refer to the video recorder user guide).

See 'Tuning the TV' and carry out the tuning procedure for the video recorder test signal. Select a programme number 0.

**④-⑤ Via RCA lead and S-Video socket**
You can also connect it through the S-Video socket of the TV.

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.



# Connecting a DVD player

**① Via SCART**
Make sure the TV and DVD player are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the DVD player and the other end into the SCART socket on the back of the TV.

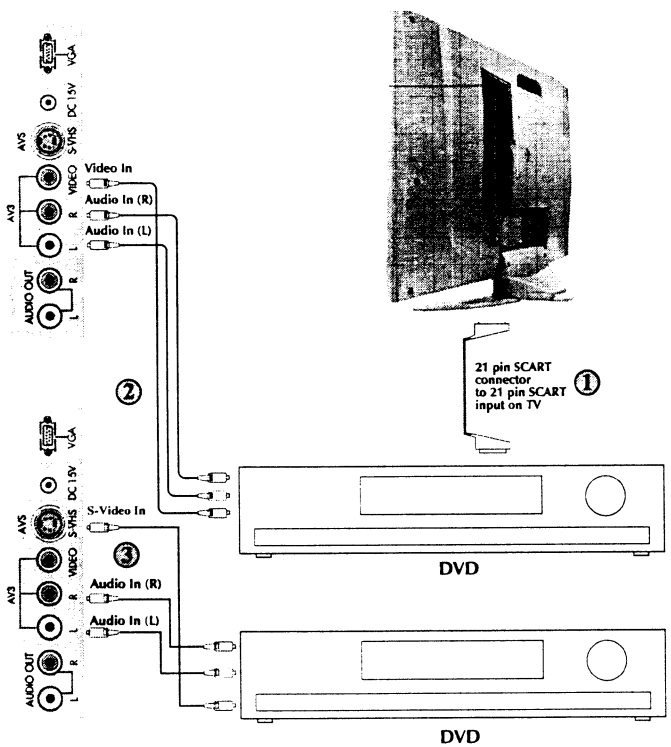
Switch on the DVD and the TV.

**② Via RCA lead**
Make sure the TV and DVD player are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the DVD player and plug the other end into the video and audio in sockets of the TV.

**③ Via RCA lead and S-Video socket**
You can also connect it through the S-Video socket of the TV.

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.

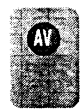



# Connecting a decoder

**Via SCART**
Make sure the TV and decoder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the decoder and the other end into the SCART on the back of the TV.

Switch on the decoder and the TV.

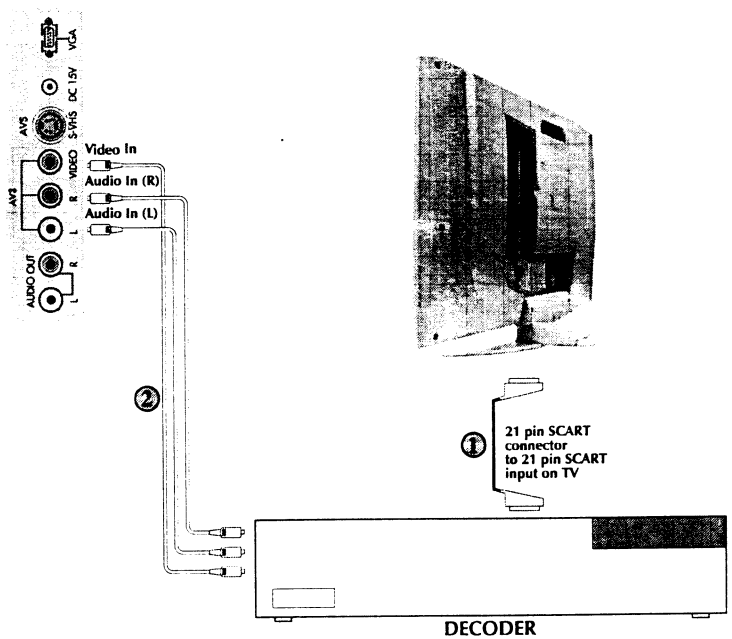



Press the **AV** button on the remote control to select AV1.

**② Via RCA lead**
Make sure the TV and decoder are both switched off.

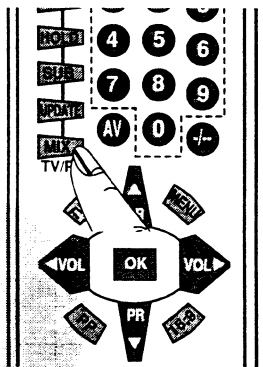
**Note:** For Decoder connection Via RCA lead your Decoder device should have the tuner built in.

Plug one end of the RCA lead into the video and audio out sockets on the back of the decoder and plug the other end into the video and audio in sockets on the TV.



## INTRODUCTION

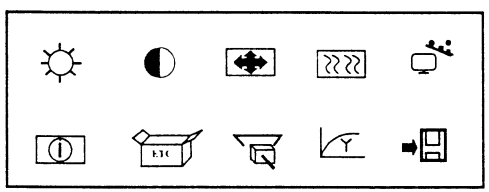
Because your 20"LCD-TV equipment is provided with VGA inputs, it may be used as a PC monitor as well. (Pug&Play)




### Entering the PC Mode

To enter the LCD-TV in to the monitor (PC) mode, the "MIX(TV-PC)" button on your remote control is used. Each time the "MIX(TV/PC)" button is presed, operation changes from the PC mode, press the "MIX" button again. In addition, you may relurn to the TV mode by selecting the "TV SELECTION" option from the monitor menu alternatively.

**Note 1:** When the system is in the monitor mode, the sound from the TV channel selected may be heard from the speakers. When you enter this mode, the sound control buttons on the remote control. ("VOL▯"/"VOL▯" MUTE) become functional
Note 2: When the system is in the monitor mode, the STANDBY button is operational. Upon exit from STANDBY, the system starts up in the TV mode again.



### PC Mode Menu Structure

After chaning to the PC mode, you may acces the monitor menus by pressing the "MENU" button on the front panel of the system

To browse in the menus, you may use the "PR▯"/"PR▯" buttons and Vol+ or Vol- buttons to select the type of adjustment you wish to make. Once you make your selection, you may set the desired adjustment value using the "PR▯"/"PR▯" buttons.

### BRIGHTNESS

After entering the Brightness Menu using the "VOL▯"/"VOL▯" buttons, you may set the brightness value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons.

### CONTRAST

After entering the Contrast Menu using the "VOL▯"/"VOL▯" buttons, you may set the contrast value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons.

### POSITION

After entering the Position Menu using the "VOL▯"/"VOL▯" buttons, you may set the geometrical adjustment value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons.
H-POSITION : Horizontal position adjustment
V-POSITION : Vertical position adjustment

### IMAGE

After entering the Image Menu using the "VOL▯"/"VOL▯" buttons, you may set the phase adjustment value of the monitor to the desired level by using the "PR▯"/"PR▯" buttons
PHASE : ADC sampling phase adjustment
CLOCK : ADC clock count Per line

**AUTO CONFIG :** Allows the entry of optimum geometrical adjustments based on the input mode

**INFORMATION :** Displays the input mode information on the screen.

### MISCELLANEOUS

You may enter the factory default settings. Menu position and duration on the screen. resolution settings etc. by selecting the MISCELLANEOUS option.
FACTORY RESET : Loads the factory default settings
OSD TIMEOUT : The on-screen timeout may be adjusted to a value between 5 - 60 seconds.
OSD POSITION : Used for adjusting the OSD Horizontal and Vertical position
NATIVE MODE : Displays the input cursor in its actual resolution

**TV SELECTION :** To change from Monitor mode to TV mode

**GAMMA :** Correction of linear RGB data to compensate for non-linear response of TFT display.

**MOIRE :** Correction of distortions giving an image of the picture lines superimposed over one another.

**SAVE :** Stores the settings entered.

**NOTE:** The user can store the geometrical adjustments (H-Position, V-Position) entered for 6 different input graphic modes. When the Autoconfig is performed, the settings provided for that mode are stored, therefore, activating the Autoconfig function each time the mode is changed. is not necessary. When the user stores the settings for a 7th mode, the first mode stored will be erased

### Warning Messages

**1.** No SYNC: The VGA input code (resolution) is missing. The "NO SYNC" message appears on the display. The message stays on the screen for 30 seconds and if no other VGA input signal that is supported by the system is not provided within that period, the system will go to "POWER SAVING" mode in order to protect the LCD panel. In this mode, the display will turn off, but the sound from the selected tuner channel will be audible

**2.** Input Not Supported: The input code (resolution) is not a supported graphics mode. The message "INPUT NOT SUPPORTED" appears on the display. The message stays on the screen until a supported graphic input code is received.

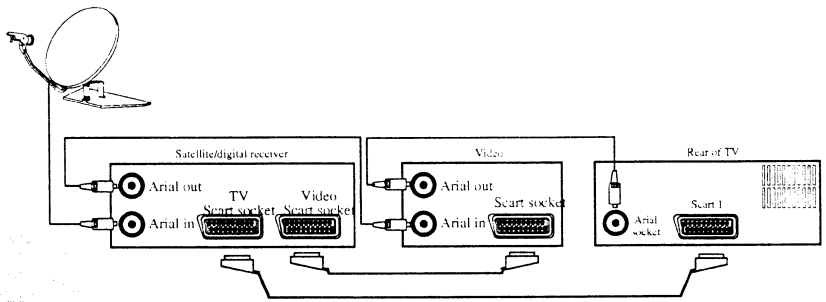
### Input Graphic Modes Supported (progressive non-interlaced)

| | |
|---|---|
| 640 x 400 x 56 Hz | 640 x 480 x 75 Hz |
| 640 x 480 x 60 Hz | 640 x 350 x 70 Hz |
| 640 x 480 x 69 Hz | 640 x 480 x 66 Hz (MAC) |
| 640 x 480 x 72 Hz | 640 x 480 x 85 Hz |

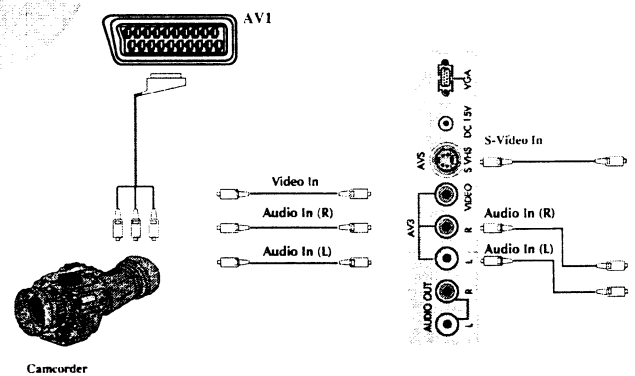
### Important Warning:

**1.** When the system changes from TV mode to VGA mode for the first time, the sound from the speakers is muted, but available through the ear-phones
**2.** When a particular VGA mode is displayed for the first time, selecting the "Autoconfiguration" option may be necessary. The position adjustment as well as the H-Position and V-Position fine adjustments must be entered and the values "saved (stored)"
**3.** When the signal is cut off, depending on the VGA power-saving standard, the message "NO SIGNAL" is displayed on the screen for 30 seconds. At the end of this period, the system turns off, providing an energy saving of 30 watts.

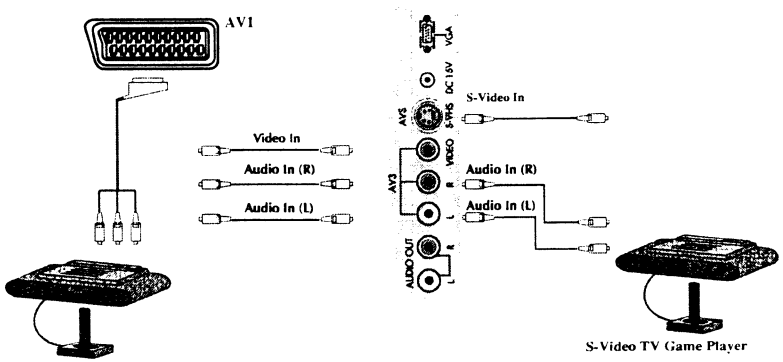
## Connecting TV with video and satellite/digital receiver



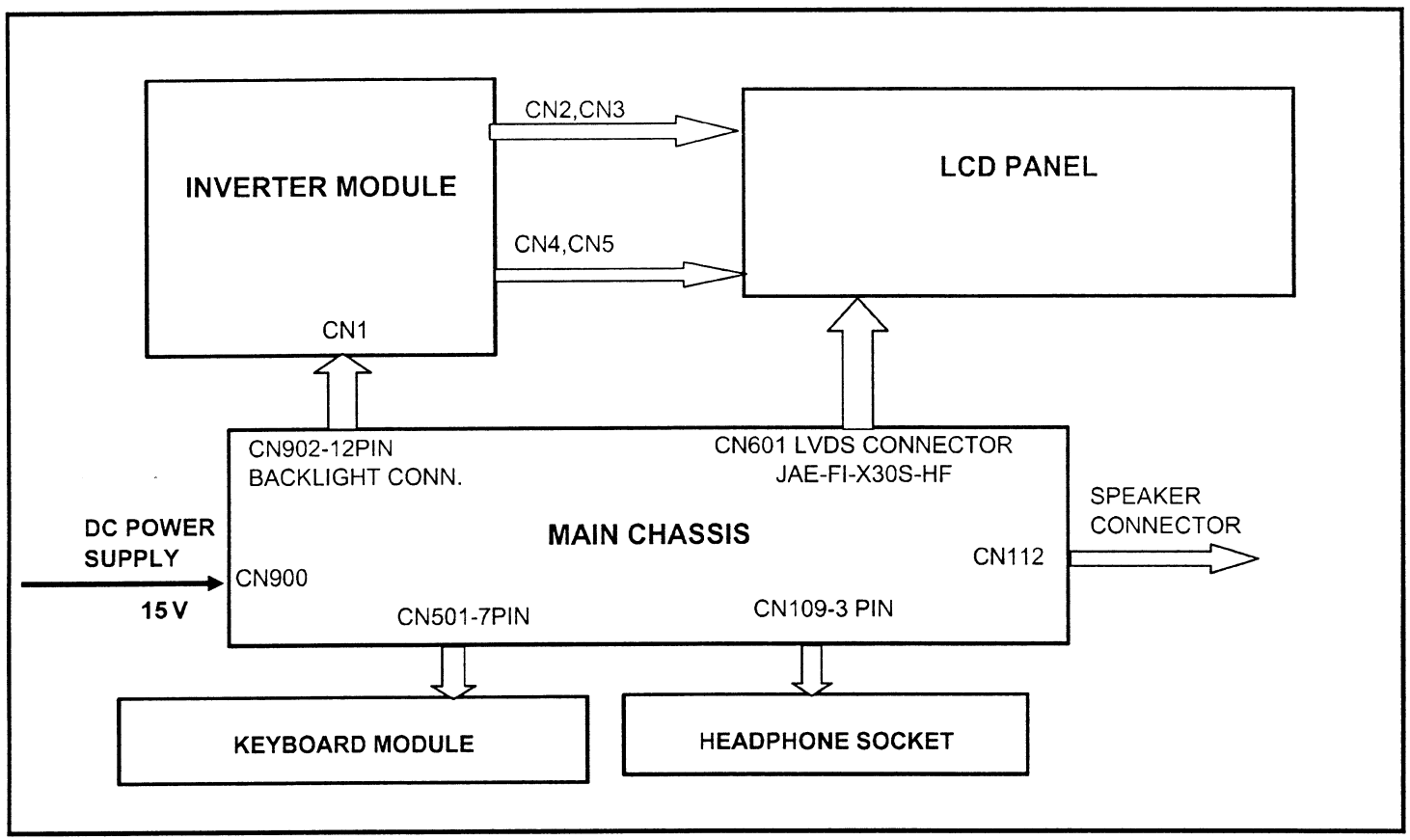

## Connecting TV with camcorder



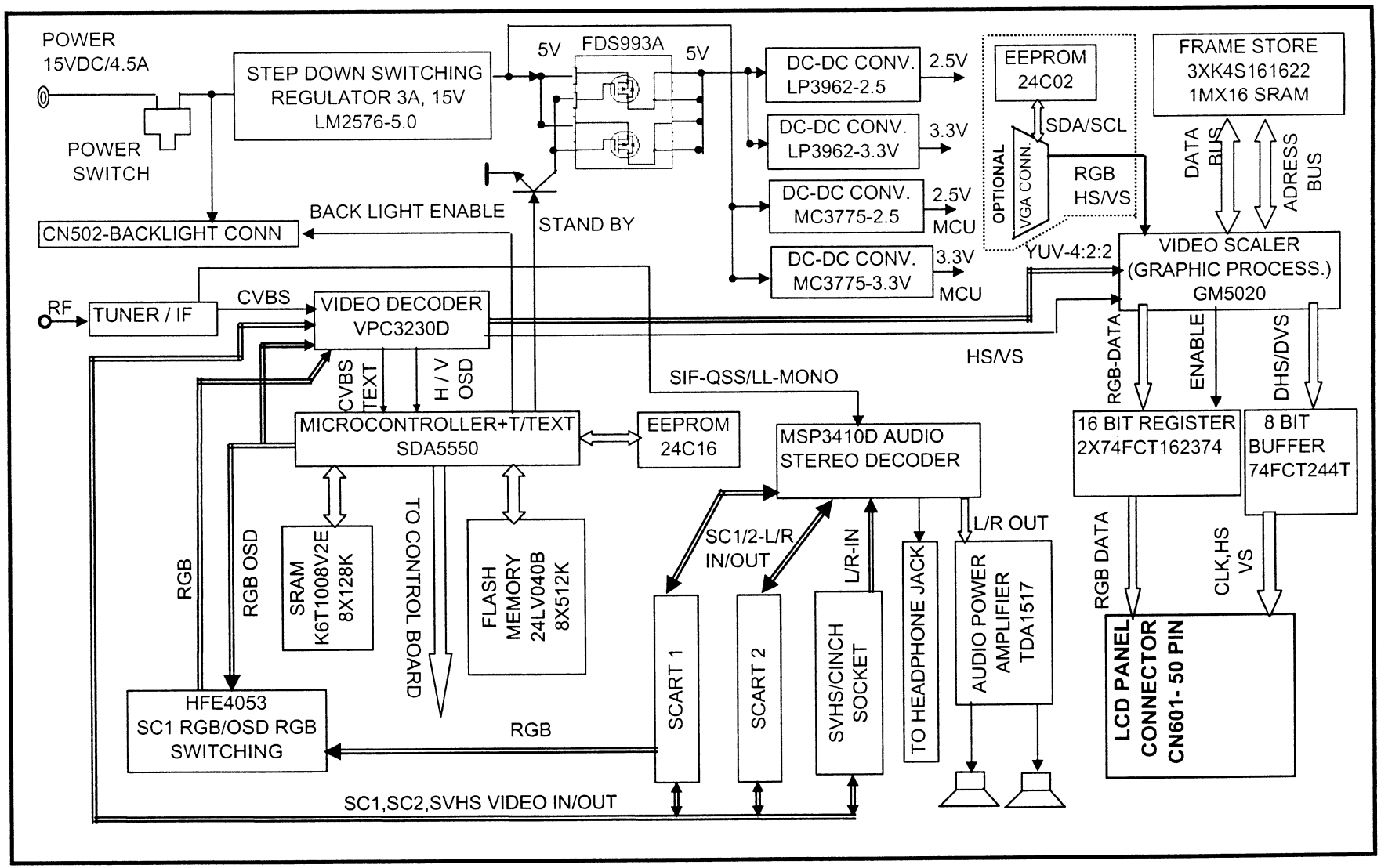

## Connecting TV games and computer



# INTERCONNECTION GUIDE



# BLOCK DIAGRAM



# SDA5550 MICROCONTROLLER

## Features

### General

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package P-SDIP 52, P-MQFP64
- Romless version package P-MQFP100,P-LCC84

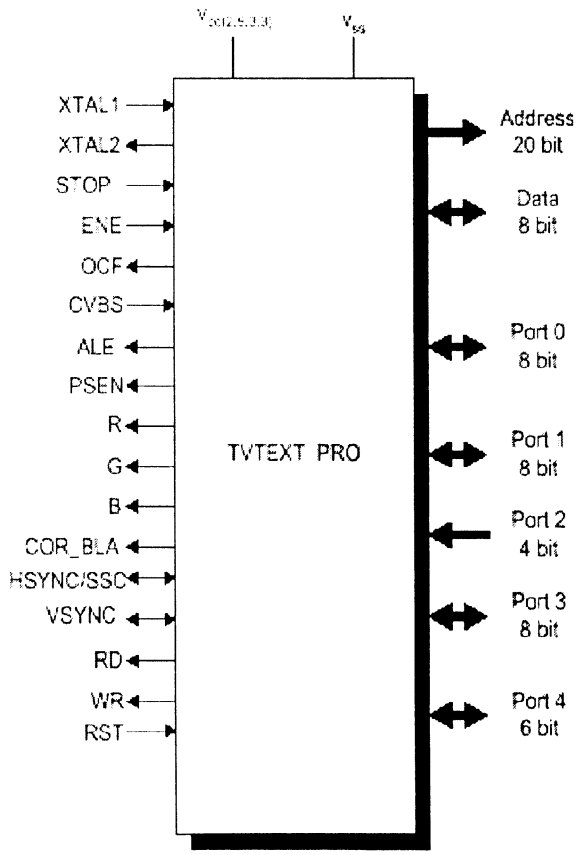
### External Crystal and Programmable clock speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers
- Normal Mode 33.33 Mhz CPU clock, Power Save mode 8.33 Mhz

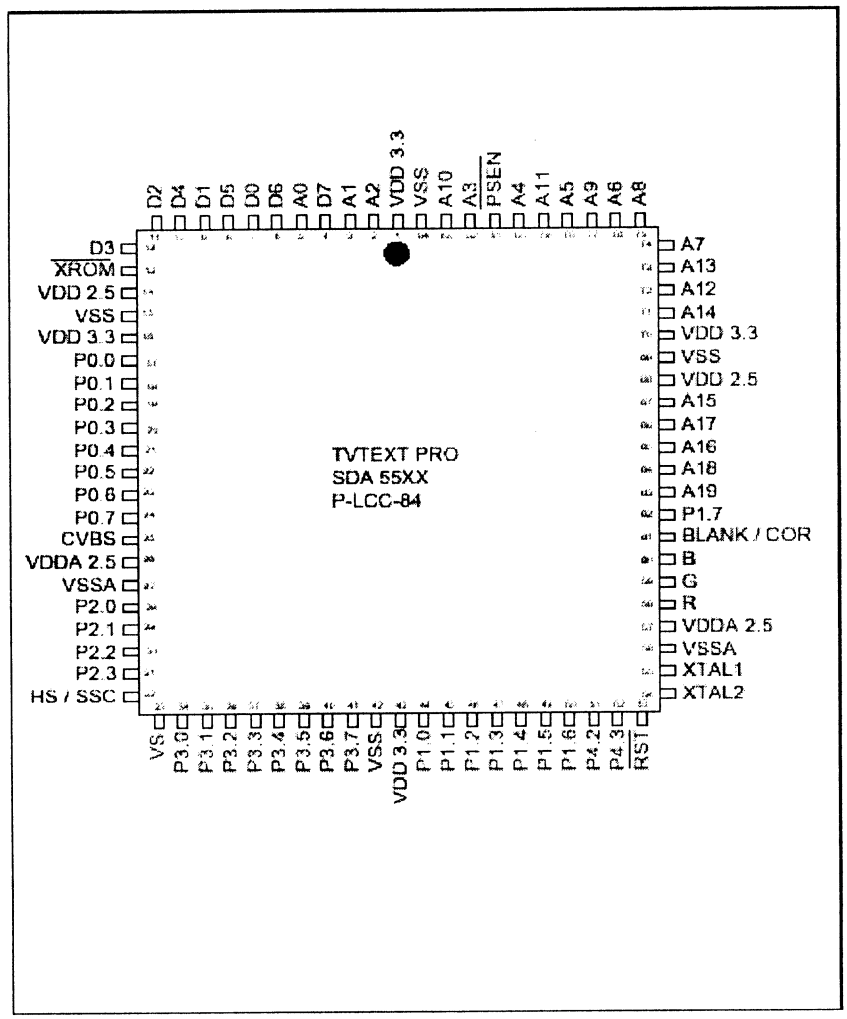
### Microcontroller Features

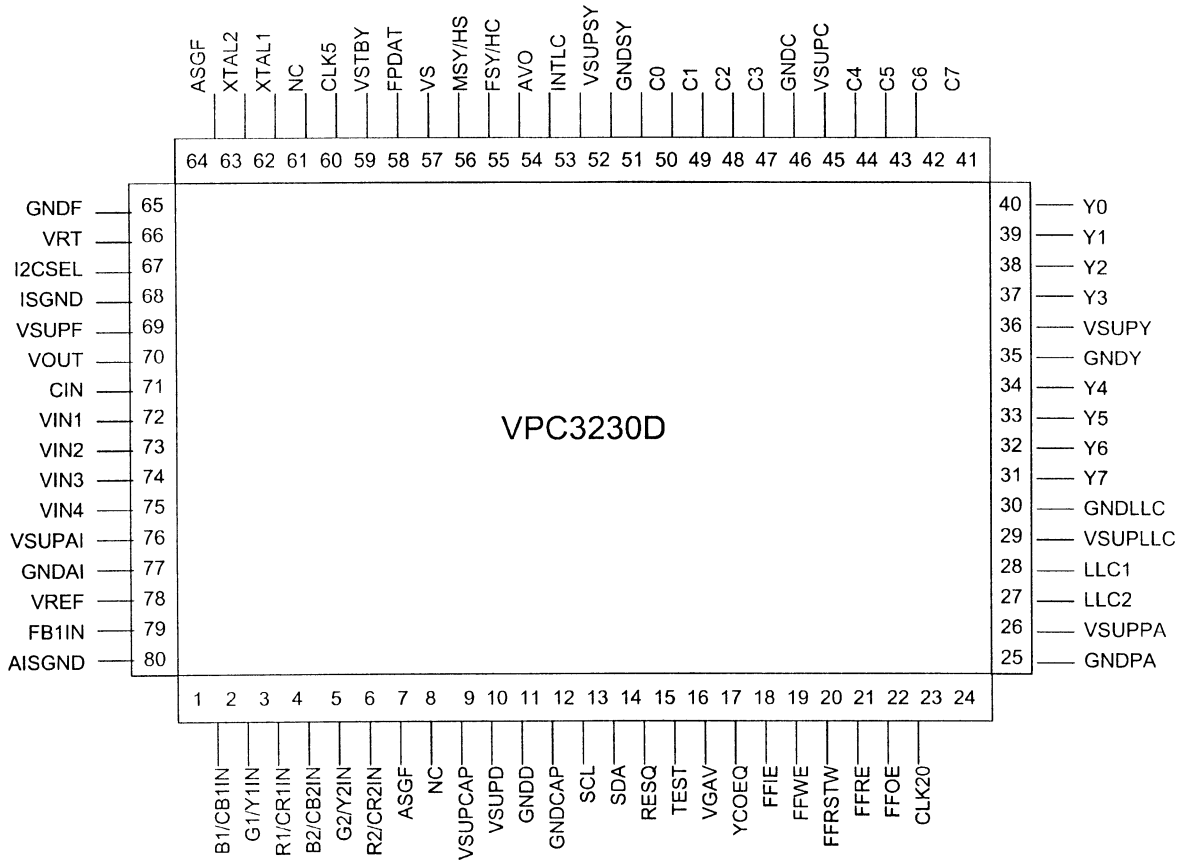
- 8bit 8051 instruction set compatible CPU.
- 33.33-MHz internal clock (max.)
- 0.360 µs (min.) instruction cycle
- Two 16-bit timers
- Watchdog timer
- Capture compare timer for infrared remote control decoding
- Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit)
- UART

# BLOCK DIAGRAM



**Pin Configuration P-LCC-84 (ROMless Version)**
(top view)




VPC3230D
ASGF 64
XTAL2 63
XTAL1 62
NC 61
CLK5 60
VSTBY 59
FPDAT 58
VS 57
MSY/HS 56
FSY/HC 55
AVO 54
INTLC 53
VSUPSY 52
GNDSY 51
C0 50
C1 49
C2 48
C3 47
GNDC 46
VSUPC 45
C4 44
C5 43
C6 42
C7 41
GNDF 65
VRT 66
I2CSEL 67
ISGND 68
VSUPF 69
VOUT 70
CIN 71
VIN1 72
VIN2 73
VIN3 74
VIN4 75
VSUPAI 76
GNDAI 77
VREF 78
FB1IN 79
AISGND 80
40 Y0
39 Y1
38 Y2
37 Y3
36 VSUPY
35 GNDY
34 Y4
33 Y5
32 Y6
31 Y7
30 GNDLLC
29 VSUPLLC
28 LLC1
27 LLC2
26 VSUPPA
25 GNDPA
1 B1/CB1IN
2 G1/Y1IN
3 R1/CR1IN
4 B2/CB2IN
5 G2/Y2IN
6 R2/CR2IN
7 ASGF
8 NC
9 VSUPCAP
10 VSUPD
11 GNDD
12 GNDCAP
13 SCL
14 SDA
15 RESQ
16 TEST
17 VGAV
18 YCOEQ
19 FFIE
20 FFWE
21 FFRSTW
22 FFRE
23 FFOE
24 CLK20

## 1. Features

Video Decoding

- 4 Composite inputs, 1 S-VHS input
- Composite video & sync output
- integrated high-quality A/D converters
- Adaptive 2H comb filter Y/C separator
- 1H NTSC comb filter
- Multi-standard color decoder(1 Crystal)
- Multi-standard sync decoder
- Black line detector

Video Decoding

- Horizontal scaling(0.25 to 4)
- Panorama vision
- Black level expander
- Dynamic peaking
- Soft limiter(gamma correction)
- Color transient improvement

RGB Processing

- Programmable RGB matrix
- Digital color bus interface
- Additional analog RGB/Fast blank input
- Half contrast switch
- Picture frame generator

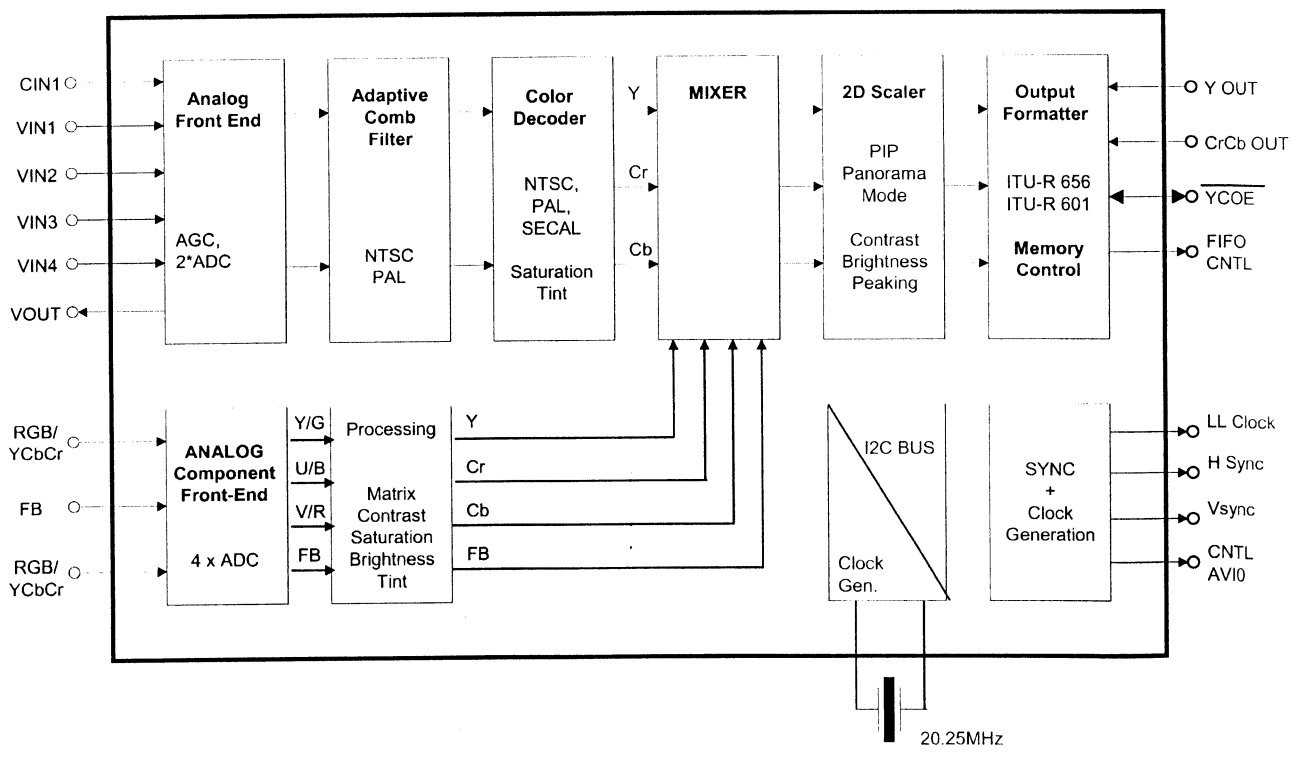
Deflection

- Scan velocity modulation output
- High performance H/V deflection
- Separate ADC for tube measurements
- EHT compensation

Miscellaneous

- One 20.25MHz crystal, few external components
- Embedded RISC controller(80 MIPS)
- I²C Bus interface
- Single 5V power supply
- Submicrom COMS technology
- 64 pin PSDIP package

## Block Diagram



## Video Processing - VPC3230D

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 1 | B1/CB1IN | IN | Blue1/Cb1 Analog Component Input |
| 2 | G1/Y1IN | IN | Green1/Y1 Analog Component Input |
| 3 | R1/CR1IN | IN | Red1/Cr1 Analog Component Input |
| 4 | B2/CB2IN | IN | Blue2/Cb2 Analog Component Input |
| 5 | G2/Y2IN | IN | Green2/Y2 Analog Component Input |
| 6 | R2/CR2IN | IN | Red2/Cr2 Analog Component Input |
| 7 | ASGF | | Analog Shield GND F |
| 8 | NC | - | No connected |
| 9 | V SUPCAP | SUPPLYD | Supply Voltage, Digital Decoupling Circuitry |
| 10 | V SUPD | SUPPLYD | Supply Voltage, Digital Circuitry |
| 11 | GND D | SUPPLYD | Ground, Digital Circuitry |
| 12 | GND CAP | SUPPLYD | Ground, Digital Decoupling Circuitry |
| 13 | SCL | IN/OUT | I 2 C Bus Clock |
| 14 | SDA | IN/OUT | I 2 C Bus Data |
| 15 | RESQ | IN | Reset Input, Active Low |
| 16 | TEST | IN | Test Pin, connect to GND D |
| 17 | VGAV | IN | VGAV Input |
| 18 | YCOEQ | IN | Y/C Output Enable Input, Active Low |
| 19 | FFIE | OUT | FIFO Input Enable |
| 20 | FFWE | OUT | FIFO Write Enable |
| 21 | FFRSTW | OUT | FIFO Reset Write/Read |
| 22 | FFRE | OUT | FIFO Read Enable |
| 23 | FFOE | OUT | FIFO Output Enable |
| 24 | CLK20 | IN/OUT | Main Clock Output 20.25 MHz |

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 25 | GND PA | SUPPLYD | Ground, Pad Decoupling Circuitry |
| 26 | V SUPPA | SUPPLYD | Supply Voltage, Pad Decoupling Circuitry |
| 27 | LLC2 | OUT | Double Clock Output |
| 28 | LLC1 | IN/OUT | Clock Output |
| 29 | V SUPLLC | SUPPLYD | Supply Voltage, LLC Circuitry |
| 30 | GND LLC | SUPPLYD | Ground, LLC Circuitry |
| 31 | Y7 | OUT | Picture Bus Luma (MSB) |
| 32 | Y6 | OUT | Picture Bus Luma |
| 33 | Y5 | OUT | Picture Bus Luma |
| 34 | Y4 | OUT | Picture Bus Luma |
| 35 | GND Y | SUPPLYD | Ground, Luma Output Circuitry |
| 36 | V SUPY | SUPPLYD | Supply Voltage, Luma Output Circuitry |
| 37 | Y3 | OUT | Y Picture Bus Luma |
| 38 | Y2 | OUT | Y Picture Bus Luma |
| 39 | Y1 | OUT | Y Picture Bus Luma |
| 40 | Y0 | OUT | Y Picture Bus Luma(LSB) |
| 41 | C7 | OUT | Picture Bus Chroma (MSB) |
| 42 | C6 | OUT | Picture Bus Chroma |
| 43 | C5 | OUT | Picture Bus Chroma |
| 44 | C4 | OUT | Picture Bus Chroma |
| 45 | V SUPC | SUPPLYD | Supply Voltage, Chroma Output Circuitry |
| 46 | GND C | SUPPLYD | Ground, Chroma Output Circuitry |
| 47 | C3 | OUT | Picture Bus Chroma |
| 48 | C2 | OUT | Picture Bus Chroma |

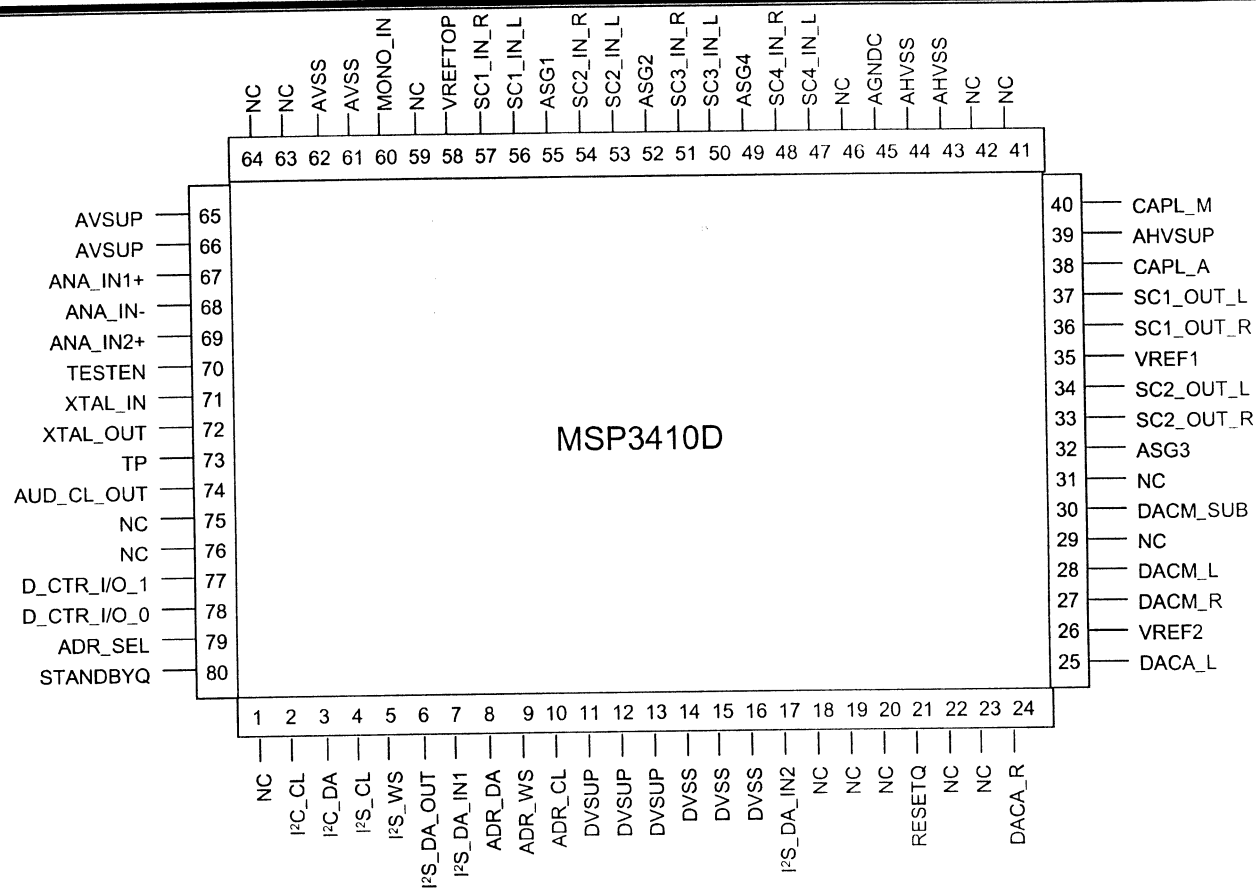


## Video Processing - VPC3230D

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 49 | C1 | OUT | Picture Bus Chroma |
| 50 | C0 | OUT | Picture Bus Chroma(LSB) |
| 51 | GND SY | SUPPLYD | Ground, Sync Pad Circuitry |
| 52 | V SUPSY | SUPPLYD | Supply Voltage, Sync Pad Circuitry |
| 53 | INTLC | OUT | Interlace Output |
| 54 | AVO | OUT | Active Video Output |
| 55 | FSY/HC | OUT | Front Sync/ Horizontal Clamp Pulse |
| 56 | MSY/HS | IN/OUT | Main Sync/Horizontal Sync Pulse |
| 57 | VS | OUT | Vertical Sync Pulse |
| 58 | FPDAT | IN/OUT | Front-End/ Back-End Data |
| 59 | V STBY | SUPPLYA | Standby Supply Voltage |
| 60 | CLK5 | OUT | CCU 5 MHz Clock Output |
| 61 | NC | - | No connected |
| 62 | XTAL1 | IN | Analog Crystal Input |
| 63 | XTAL2 | OUT | Analog Crystal Output |
| 64 | ASGF | | Analog Shield GND F |
| 65 | GND F | SUPPLYA | Ground, Analog Front-End |
| 66 | VRT | OUT | Reference Voltage Top, Analog |
| 67 | I2CSEL | IN | I 2 C Bus Address Select |
| 68 | ISGND | SUPPLYA | Signal Ground for Analog Input, connect to GND F |
| 69 | V SUPF | SUPPLYA | Supply Voltage, Analog Front-End |
| 70 | VOUT | OUT | Analog Video Output |

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 71 | CIN | IN | Chroma / Analog Video 5 Input |
| 72 | VIN1 | IN | Video 1 Analog Input |
| 73 | VIN2 | IN | Video 2 Analog Input |
| 74 | VIN3 | IN | Video 3 Analog Input |
| 75 | VIN4 | IN | Video 4 Analog Input |
| 76 | V SUPAI | SUPPLYA | Supply Voltage, Analog Component Inputs Front-End |
| 77 | GND AI | SUPPLYA | Ground, Analog Component Inputs Front-End |
| 78 | VREF | OUT | Reference Voltage Top, Analog Component Inputs Front-End |
| 79 | FB1IN | IN | Fast Blank Input |
| 80 | AISGND | SUPPLYA | Signal Ground for Analog Component Inputs, connect to GND AI |

# Audio Processing - MSP3440G




# Audio Processing - MSP3410D

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 1 | NC | | Not connected |
| 2 | I2C_CL | IN/OUT | I2Cclock |
| 3 | I2C_DA | IN/OUT | I2C data |
| 4 | I2S_CL | IN/OUT | I2S clock |
| 5 | I2S_WS | IN/OUT | I2S word strobe |
| 6 | I2S_DA_O | OUT | I2S data output |
| 7 | I2S_DA_IN | IN | I2S1 data input |
| 8 | ADR_DA | OUT | ADR data output |
| 9 | ADR_WS | OUT | ADR word strobe |
| 10 | ADR_CL | SUPPLYD | Supply Voltage, Digital Circuitry |
| 11 | DVSUP | SUPPLYD | Ground, Digital Circuitry |
| 12 | DVSUP | SUPPLYD | Ground |
| 13 | DVSUP | IN/OUT | I 2 C Bus Clock |
| 14 | DVSS | IN/OUT | I 2 C Bus Data |
| 15 | DVSS | IN | Reset Input, Active Low |
| 16 | DVSS | IN | Test Pin, connect to GND D |
| 17 | I2S_DA_IN | IN | VGAV Input |
| 18 | NC | IN | Y/C Output Enable Input, Active Low |
| 19 | NC | OUT | FIFO Input Enable |
| 20 | NC | OUT | FIFO Write Enable |
| 21 | RESET_Q | OUT | FIFO Reset Write/Read |
| 22 | NC | OUT | FIFO Read Enable |
| 23 | NC | OUT | FIFO Output Enable |
| 24 | DACA_R | IN/OUT | Main Clock Output 20.25 MHz |
| 25 | DACA_R | SUPPLYD | Ground |

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 26 | V SUPPA | SUPPLYD | Supply Voltage |
| 27 | LLC2 | OUT | Double Clock Output |
| 28 | LLC1 | IN/OUT | Clock Output |
| 29 | V SUPLLC | SUPPLYD | Supply Voltage, LLC Circuitry |
| 30 | GND LLC | SUPPLYD | Ground, LLC Circuitry |
| 31 | Y7 | OUT | Picture Bus Luma (MSB) |
| 32 | Y6 | OUT | Picture Bus Luma |
| 33 | Y5 | OUT | Picture Bus Luma |
| 34 | Y4 | OUT | Picture Bus Luma |
| 35 | GND Y | SUPPLYD | Ground, Luma Output Circuitry |
| 36 | V SUPY | SUPPLYD | Supply Voltage, Luma Output Circuitry |
| 37 | Y3 | OUT | Y Picture Bus Luma |
| 38 | Y2 | OUT | Y Picture Bus Luma |
| 39 | Y1 | OUT | Y Picture Bus Luma |
| 40 | Y0 | OUT | Y Picture Bus Luma(LSB) |
| 41 | C7 | OUT | Picture Bus Chroma (MSB) |
| 42 | C6 | OUT | Picture Bus Chroma |
| 43 | C5 | OUT | Picture Bus Chroma |
| 44 | C4 | OUT | Picture Bus Chroma |
| 45 | V SUPC | SUPPLYD | Supply Voltage, Chroma Output Circuitry |
| 46 | GND C | SUPPLYD | Ground, Chroma Output Circuitry |
| 47 | C3 | OUT | Picture Bus Chroma |
| 48 | C2 | OUT | Picture Bus Chroma |
| 49 | C1 | OUT | Picture Bus Chroma |
| 50 | C0 | OUT | Picture Bus Chroma(LSB) |

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 51 | GND SY | SUPPLYD | Ground, Sync Pad Circuitry |
| 52 | V SUPSY | SUPPLYD | Supply Voltage, Sync Pad Circuitry |
| 53 | INTLC | OUT | Interlace Output |
| 54 | AVO | OUT | Active Video Output |
| 55 | FSY/HC | OUT | Front Sync/ Horizontal Clamp Pulse |
| 56 | MSY/HS | IN/OUT | Main Sync/Horizontal Sync Pulse |
| 57 | SC1_in_R | IN | SCART 1input,right |
| 58 | VREFTOP | | Reference voltage IF A/D converter |
| 59 | NC | | Not connected |
| 60 | MONO_IN | IN | Mono input |
| 61 | AVSS | | Analog ground |
| 62 | AVSS | | Analog ground |
| 63 | NC | | Not connected |
| 64 | NC | | Not connected |
| 65 | AVSUP | | Analog power supply 5V |
| 66 | AVSUP | | Analog power supply 5V |
| 67 | ANA_IN+ | IN | IF input 1 |
| 68 | ANA_IN- | IN | IF common{can be left vacant,only if IF input1 is also not in use} |
| 69 | ANA_IN2+ | IN | IF input{can be left vacant,only if IF input1 is also not in use} |
| 70 | TESTEN | IN | Test pin |
| 71 | XTAL_IN | IN | Crystal oscillator |

| Pin No. | Pin Name | Type | Short Description |
|---|---|---|---|
| 72 | XTAL_OU | OUT | Crystal oscillator |
| 73 | TP | | Test pin |
| 74 | AUD_CL_( | OUT | Audio clock output(18.432MHz) |
| 75 | NC | | Not connected |
| 76 | NC | | Not connected |
| 77 | D_CTR_I/( | IN/OUT | D_CTR_I/O_1 |
| 78 | D_CTR_I/( | IN/OUT | D_CTR_I/O_0 |
| 79 | ADR_SEL | IN | I2C Bus address select |
| 80 | STANDBY | IN | Stand-by(low active) |

# LM2576

# 3.0 A, 15 V, Step-Down Switching Regulator

The LM2576 series of regulators are monolithic integrated circuits ideally suited for easy and convenient design of a step–down switching regulator (buck converter). All circuits of this series are capable of driving a 3.0 A load with excellent line and load regulation. These devices are available in fixed output voltages of 3.3 V, 5.0 V, 12 V, 15 V, and an adjustable output version.

These regulators were designed to minimize the number of external components to simplify the power supply design. Standard series of inductors optimized for use with the LM2576 are offered by several different inductor manufacturers.

Since the LM2576 converter is a switch–mode power supply, its efficiency is significantly higher in comparison with popular three–terminal linear regulators, especially with higher input voltages. In many cases, the power dissipated is so low that no heatsink is required or its size could be reduced dramatically.

A standard series of inductors optimized for use with the LM2576 are available from several different manufacturers. This feature greatly simplifies the design of switch–mode power supplies.

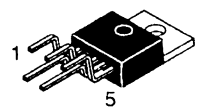
The LM2576 features include a guaranteed ±4% tolerance on output voltage within specified input voltages and output load conditions, and ±10% on the oscillator frequency (±2% over 0°C to 125°C). External shutdown is included, featuring 80 μA (typical) standby current. The output switch includes cycle–by–cycle current limiting, as well as thermal shutdown for full protection under fault conditions.

### Features

- 3.3 V, 5.0 V, 12 V, 15 V, and Adjustable Output Versions
- Adjustable Version Output Voltage Range, 1.23 to 37 V ±4% Maximum Over Line and Load Conditions
- Guaranteed 3.0 A Output Current
- Wide Input Voltage Range
- Requires Only 4 External Components
- 52 kHz Fixed Frequency Internal Oscillator
- TTL Shutdown Capability, Low Power Standby Mode
- High Efficiency
- Uses Readily Available Standard Inductors
- Thermal Shutdown and Current Limit Protection
- Moisture Sensitivity Level (MSL) Equals 1

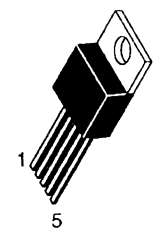
**ON Semiconductor™**

**http://onsemi.com**



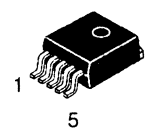

**TO–220**
**TV SUFFIX**
**CASE 314B**

Heatsink surface connected to Pin 3




**TO–220**
**T SUFFIX**
**CASE 314D**

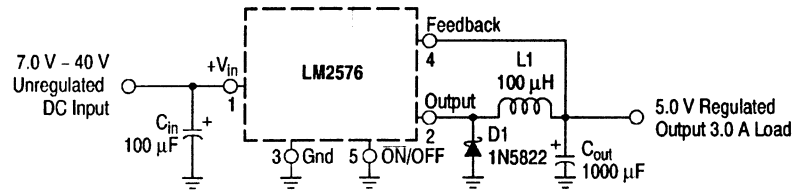
Pin 1. $V_{in}$
2. Output
3. Ground
4. Feedback
5. $\overline{ON}$/OFF



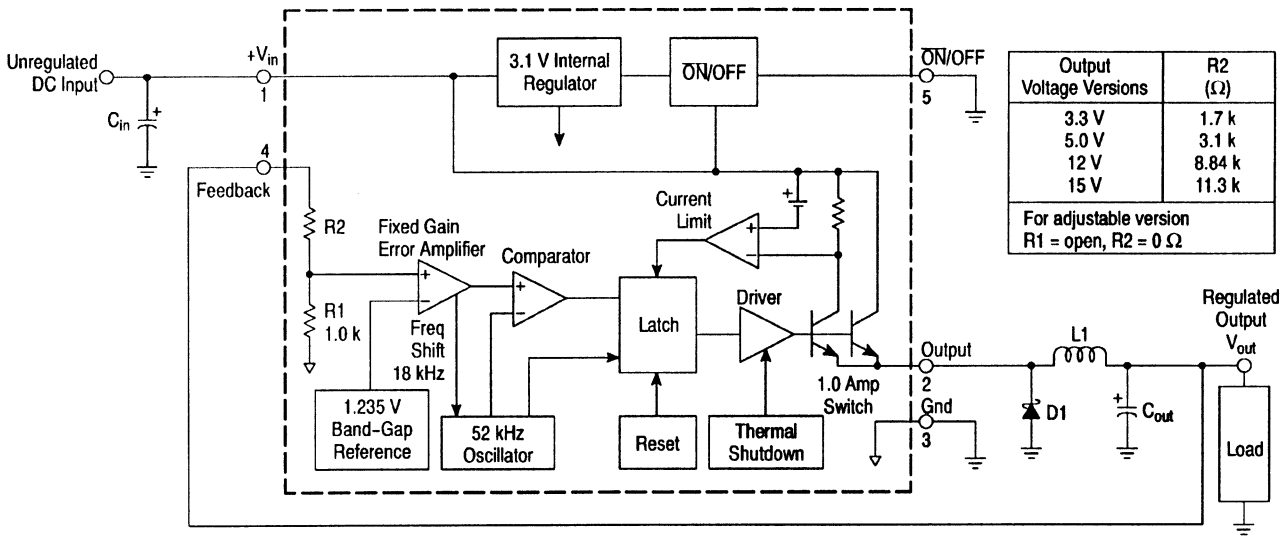

**$D^2PAK$**
**D2T SUFFIX**
**CASE 936A**

Heatsink surface (shown as terminal 6 in case outline drawing) is connected to Pin 3

**Typical Application** (Fixed Output Voltage Versions)




**Representative Block Diagram and Typical Application**




| Output Voltage Versions | R2 (Ω) |
|---|---|
| 3.3 V | 1.7 k |
| 5.0 V | 3.1 k |
| 12 V | 8.84 k |
| 15 V | 11.3 k |
| For adjustable version R1 = open, R2 = 0 Ω | |

# FDS9933A

## Dual P-Channel 2.5V Specified PowerTrench™ MOSFET

### General Description

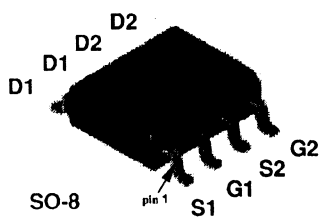
These P-Channel 2.5V specified MOSFETs are produced using Fairchild Semiconductor's advanced PowerTrench process that has been especially tailored to minimize the on-state resistance and yet maintain low gate charge for superior switching performance.

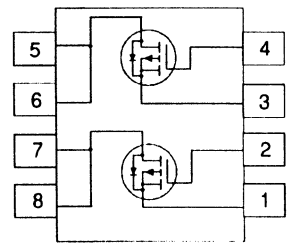
### Applications

- Load switch
- DC/DC converter
- Motor drives

### Features

- -3.8 A, -20 V. $R_{DS(on)}$ = 0.075 Ω @ $V_{GS}$ = -4.5 V
  $R_{DS(on)}$ = 0.105 Ω @ $V_{GS}$ = -2.5 V.
- Low gate charge ( 7nC typical ).
- Fast switching speed.
- High performance trench technology for extremely low $R_{DS(on)}$.
- High power and current handling capability.



# CY74FCT16374T
# CY74FCT162374T

## 16-Bit Registers

### Features

- **$I_{off}$ supports partial-power-down mode operation**
- **Edge-rate control circuitry for significantly improved noise characteristics**
- **Typical output skew < 250 ps**
- **ESD > 2000V**
- **TSSOP (19.6-mil pitch) and SSOP (25-mil pitch) packages**
- **Industrial temperature range of –40°C to +85°C**
- **$V_{CC}$ = 5V ± 10%**

*CY74FCT16374T Features:*

- **64 mA sink current, 32 mA source current**
- **Typical $V_{OLP}$ (ground bounce) <1.0V at $V_{CC}$ = 5V, $T_A$ = 25°C**

*CY74FCT162374T Features:*

- **Balanced 24 mA output drivers**
- **Reduced system switching noise**
- **Typical $V_{OLP}$ (ground bounce) <0.6V at $V_{CC}$ = 5V, $T_A$= 25°C**

### Functional Description

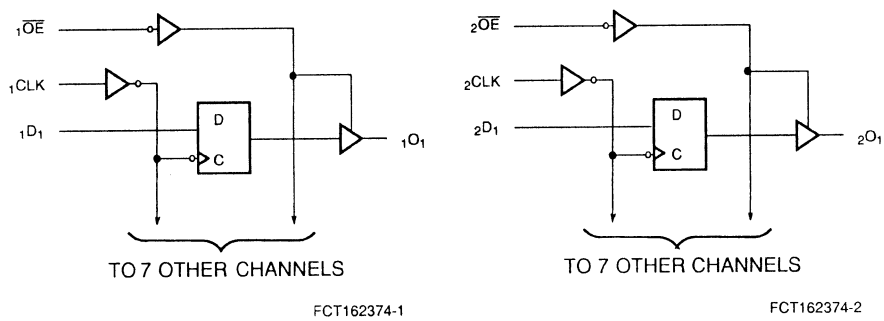
CY74FCT16374T and CY74FCT162374T are 16-bit D-type registers designed for use as buffered registers in high-speed, low power bus applications. These devices can be used as two independent 8-bit registers or as a single 16-bit register by connecting the output Enable (OE) and Clock (CLK) inputs. Flow-through pinout and small shrink packaging aid in simplifying board layout.

This device is fully specified for partial-power-down applications using $I_{off}$. The $I_{off}$ circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

The CY74FCT16374T is ideally suited for driving high-capacitance loads and low-impedance backplanes.

The CY74FCT162374T has 24-mA balanced output drivers with current limiting resistors in the outputs. This reduces the need for external terminating resistors and provides for minimal undershoot and reduced ground bounce. The CY74FCT162374T is ideal for driving transmission lines.

### Logic Block Diagrams

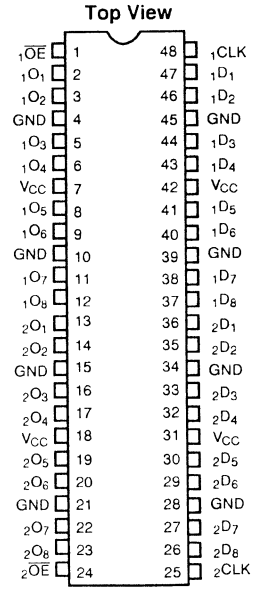



FCT162374-1

FCT162374-2

### Pin Configuration

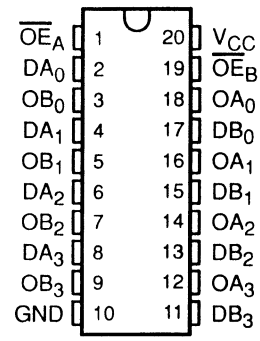
SSOP/TSSOP
Top View



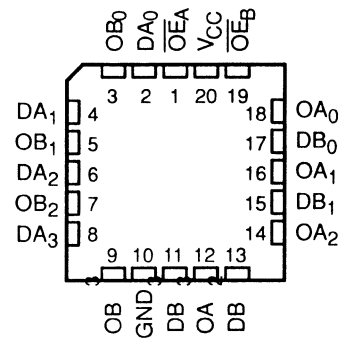

FCT162374-3

- Function, Pinout, and Drive Compatible With FCT and F Logic
- Reduced $V_{OH}$ (Typically = 3.3 V) Versions of Equivalent FCT Functions
- Edge-Rate Control Circuitry for Significantly Improved Noise Characteristics
- $I_{off}$ Supports Partial-Power-Down Mode Operation
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)
- Matched Rise and Fall Times
- Fully Compatible With TTL Input and Output Logic Levels
- CY54FCT244T
  - 48-mA Output Sink Current
    12-mA Output Source Current
- CY74FCT244T
  - 64-mA Output Sink Current
    32-mA Output Source Current
- 3-State Outputs

CY54FCT244T . . . D PACKAGE
CY74FCT244T . . . P, Q, OR SO PACKAGE
(TOP VIEW)




CY54FCT244T . . . L PACKAGE
(TOP VIEW)




## description

The 'FCT244T devices are octal buffers and line drivers designed to be employed as memory address drivers, clock drivers, and bus-oriented transmitters/receivers. These devices provide speed and drive capabilities equivalent to their fastest bipolar logic counterparts, while reducing power consumption. The input and output voltage levels allow direct interface with TTL, NMOS, and CMOS devices without external components.

These devices are fully specified for partial-power-down applications using $I_{off}$. The $I_{off}$ circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

## 2. SUITABLE LOAD

LCD-Module: Samsung 17"E4 4lamp TFT LCD

## 3. ELECTRICAL CHARACTERISTICS

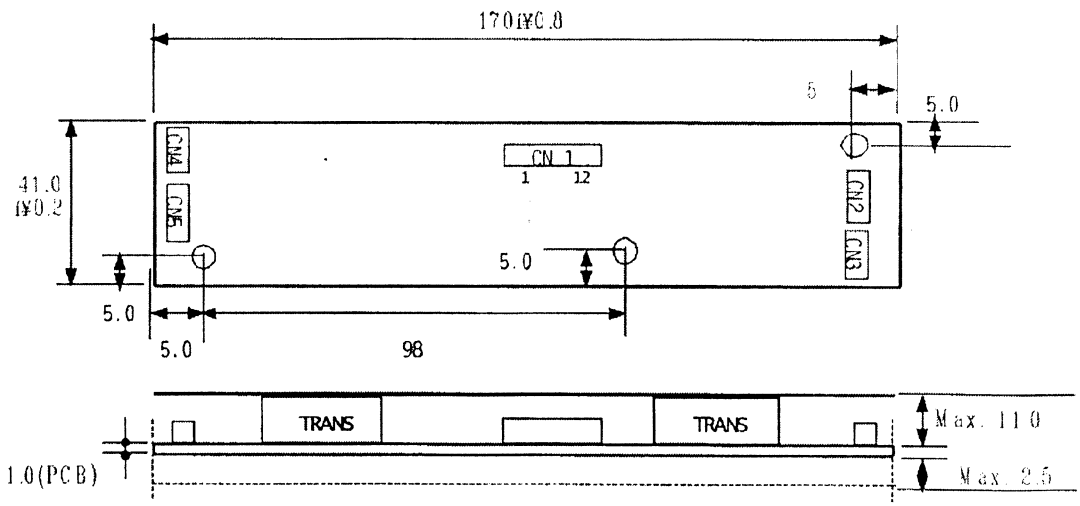
### 3.1 Absolute Maximum Ratings

| Item | Symbol | Spec | Unit |
|---|---|---|---|
| Input voltage 1 | Vin1 | 11.5 ~ 12.5 | V |
| Input voltage 2 | Vin2 | 4.9 ~ 5.1 | V |
| Operating Temperature | Top | 0 ~ 50 | °C |
| Storage Temperature | Tstg | - 30 ~ 80 | °C |
| Relative Humidity | RH | 90 | % |

### 3.2 Control Signal

| Pin No. | Symbol | Status | Action | Remarks |
|---|---|---|---|---|
| CN1 # 4 | BKLT_ON | HIGH | LAMP (CCFL) - ON | 2.4 ~ 5.25V |
| | | LOW | LAMP (CCFL) - OFF | 0.8V max. |

## 5. APPEARANCE



## 4. INTERFACE

### 4.1 CN1 Connector: 53261 – 1290

| Pin No. | Symbol | Remarks |
|---|---|---|
| 2 | BRT_ADJ | 0 ~ 5V |
| 1,3,5,6,8,9 | GND | GND |
| 4 | BL ON / OFF | CCFL drive signal (active HIGH) |
| 7 | N.C | |
| 10,11,12 | DC-IN (V in) | DC INPUT power (12V) |

### 4.2 CN2 Connector: SM02B – BHS – 1 – TB(JST)

| Pin No. | Symbol | Remarks |
|---|---|---|
| 1 | HOT | HIGH |
| 2 | COLD | LOW |

### 4.3 CN3 Connector: SM02B – BHS – 1 – TB(JST)

| Pin No. | Symbol | Remarks |
|---|---|---|
| 1 | HOT | HIGH |
| 4 | COLD | LOW |

### 4.4 CN4 Connector: SM02B – BHS – 1 – TB(JST)

| Pin No. | Symbol | Remarks |
|---|---|---|
| 1 | HOT | HIGH |
| 4 | COLD | LOW |

### 4.5 CN5 Connector: SM02B – BHS – 1 – TB(JST)

| Pin No. | Symbol | Remarks |
|---|---|---|
| 1 | HOT | HIGH |
| 4 | COLD | LOW |

## SERVICE ADJUSTMENTS AND OPTIONS

**Entering the service mode:** In TV mode ,Press Menu key and enter "9301".

**Exiting from service mode**: Press "TV/TX" key (SW version is prompted when exiting from service mode)

**Navigation:** P+/P- moves upward / downward inside the service menu.
V+/V- changes the values or options

**Sevice menu sub pages:** Press Red, Green or Blues key to access sub pages of service mode

### Feature Options

| | |
|---|---|
| TUNER | : TEMIC, P.SONIC, SHARP&ALPS, PHILIPS |
| TELETEXT | : DEFAULT -Teletext<br>FASTEXT-Fastext<br>TOPTEXT- Toptext<br>TOP&FAST : Toptext and Fastext |
| SWAP / ZAP: | SWAP- Swap is active<br>ZAP: Zap is active |
| STAND BY: | YES- User mode<br>NO: Factory mode |
| VIDEO | : OLD, NEW-No function |
| MONITOR | : Yes (Monitor connection is available)<br>: No (Monitor connection is not supported) |
| LANGUAGE | : Used to select the menu language.<br><br>GROUP 0 : (English, German, French, Itailan, Spanish, Turkish , Swiss , Norwegian, Danish, Finnish , Dutch, Polish, Greek, Bulgarian, Russian, Hebrew)<br><br>GROUP 1: ( English,German, French, Itailan, Spanish, Turkish ,Swiss, Hungary, Polish, Romanian, Croatian , Slovenian, Greek, Bulgarian, Russian, Arabian) |

BG : Yes (AVAILABLE) or No (NOT AVAILABLE)
DK : Yes (AVAILABLE) or No (NOT AVAILABLE)
I : Yes (AVAILABLE) or No (NOT AVAILABLE)
L/L' : Yes (AVAILABLE) or No (NOT AVAILABLE)
NICAM : Yes (AVAILABLE) or No (NOT AVAILABLE)
HEADPHONE : Yes (AVAILABLE) or No (NOT AVAILABLE)

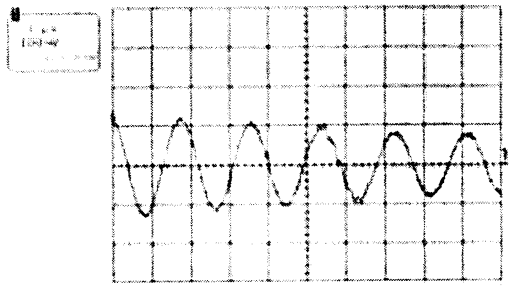
CARRIER MUTE : VIA MSP (Default)
VIA MICRO

## Factory Settings for Service Mode

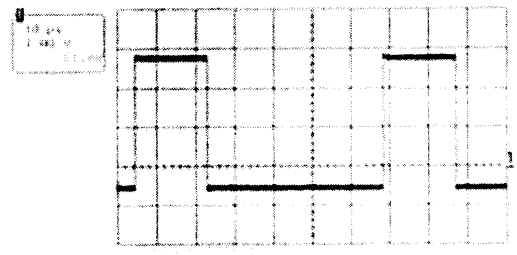
| ITEM | FUNCTION | FACTORY VALUE |
|---|---|---|
| AGC | AUTOMATIC GAIN CONTROL | 2 |
| R-CUT | RED CUT OF ADJUSTMENT | 2 |
| G-CUT | GREEN CUT OF ADJUSTMENT | 0 |
| B-CUT | BLUE CUT OF ADJUSTMENT | 0 |
| R.DRV | RED DRIVE ADJUSMENT | 0 |
| G.DRV | GREEN DRIVE ADJUSMENT | 0 |
| B.DRV | BLUE DRIVE ADJUSMENT | 0 |
| BACKLIGHT | BACK LIGHT ADJUSTMENT | 0 |

# WAVEFORMS

**Note** : TV is connected to a pattern generator with colour bar signal and L=3KHz, R=1KHz

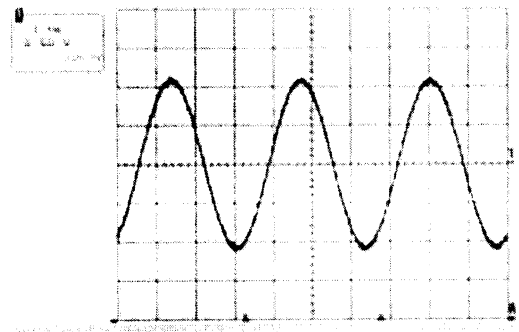


Tuner SIF

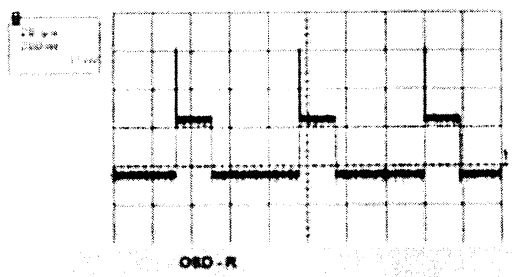


OSD - FBL

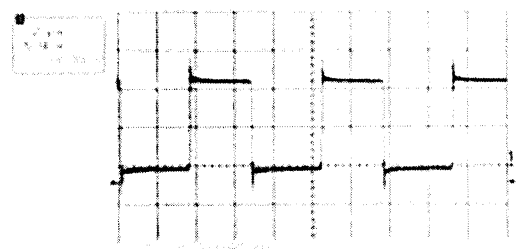
OSD -S



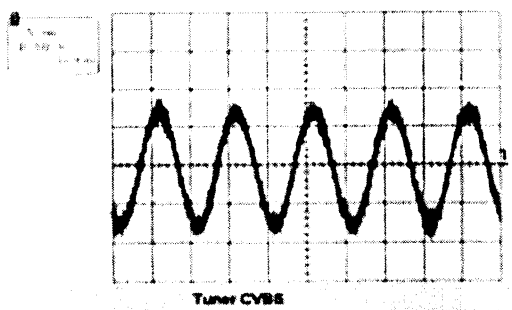
HEADPHONE LEFT



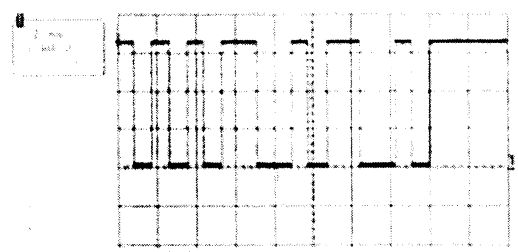
OSD - R



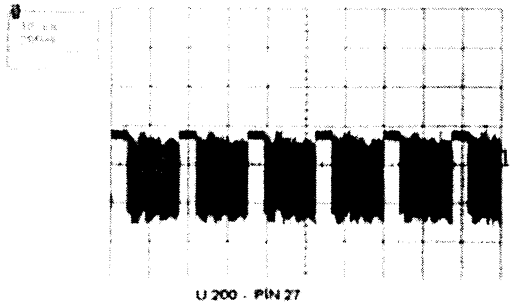
12 VOLT POWER SUPPLY



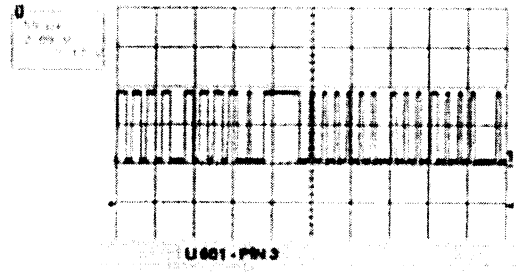
Tuner CVBS



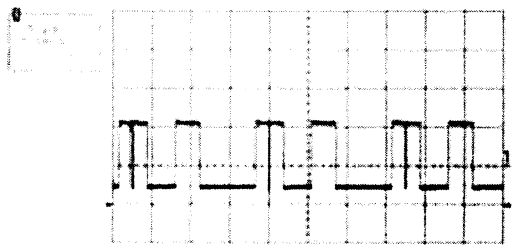
CN 501 - PIN 4



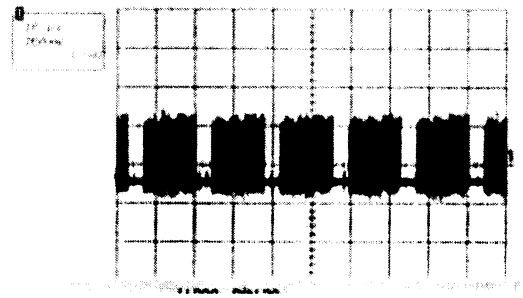
U 200 - PIN 27

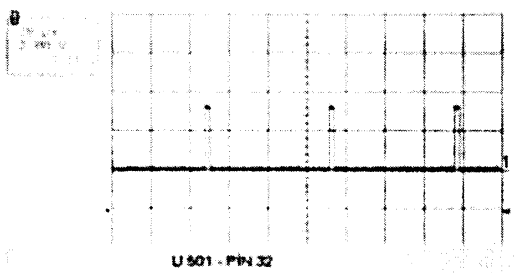


U 601 - PIN 3

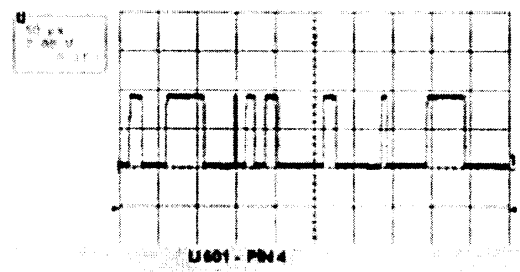


U 200 - PIN 31

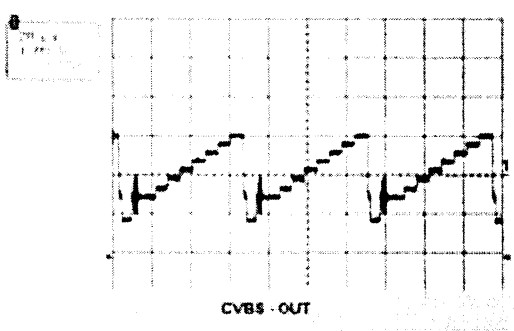




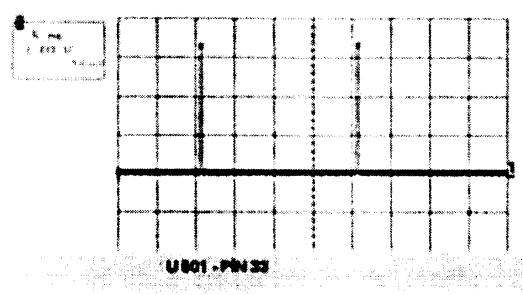
U 501 - PIN 32



U 601 - PIN 4



CVBS - OUT



U 601 - PIN 33

# SPARE PART LIST

| Position | Part Number | Object description |
|---|---|---|
| AV/TV | 10860 | TACT SW LONG STEN |
| CN601 | ZF7502-AS | CABLE PANEL INTERFACE LCD 30" CHIMEI |
| D01 | 303991 | LED IR SIR563SB3F 23/940 |
| D02 | 303993 | LED LTL4221N D:3 R/D RED |
| D1 | 303900 | LED ROT |
| F900 | 54264 | FUSE T4A |
| IC01 | 452382 | IC-CHIP S3C1840DA9/SMB1 T&R |
| IR1 | 452521-01 | IR RECEIVER TSOP34838 SS1A |
| MENU | 10860 | TACT SW LONG STEN |
| SW1 | 10861 | ON/OFF SWITCH BK98 |
| TU100 | X70138 | TUNER FRONT SAMSUNG TCPQ9091PD27D(S) |
| U101 | 453026 | IC-CHIP MSP3410G PQFP80 T&R |
| U102 | 452904 | IC LM78L08ACZ |
| U103 | 453021 | IC TDA1517P |
| U300 | 453010 | IC -CHIP M24C02 - MN6T (4.5 - 5.5V) SO8 |
| U400 | 452937 | IC-CHIP VPC3230D-C5 QFP80 T&R |
| U401 | 452985 | IC-CHIP MC14053BD SOIC16 |
| U501 | 453013 | IC SDA5550 PLCC-84 TRAY |
| U502 | 453256 | IC-CHIP K6F2008V2E-YF70-256K X 8BIT T&R |
| U504 | 453124 | IC-CHIP NCP1117DT33RK TO-252 PACKAGE |
| U505 | SL417WS-S02 | SW/IC SDA5550 PLCC-84 17W L2/L4 |
| U505 | 453001 | IC M29W040B70N1T |
| U506 | 452662-02 | IC-CHIP AT24C16AN 10SI2.7 TAPE&REEL |
| U701 | 401372 | TRN FDS9933A |
| U900 | 453007 | IC LM2596S-5.0 |
| U902 | 453124 | IC-CHIP NCP1117DT33RK TO-252 PACKAGE |
| V(-) | 10860 | TACT SW LONG STEN |
| V(+) | 10860 | TACT SW LONG STEN |
| | ZF7172 | CU ASSY 30L4L30 |
| | ZF7262 | KNOB PROGRAM VOLUME SILVER 17W L19 LCDTV |
| | ZF7212F | KNOB PROGRAM VOLUME 17W L19 LCD TV SILVE |
| | ZF7204F | MERCEK IR/LED 30" LCD TV |
| | TF5110 | L4 CHASIS 30W LCD P/NX/2/K/S/VGA/NT A-O |
| | X72110-TUNSS | L2-CHASSIS-SAMSUNG TUNER |
| | 056W30-CH2 | LCD CHI-MEI V296W1-L14 (LCD TV) 30" |
| | ZF7913 | ADAPTOR SPS 180W 24/5 15/4 PFC |
| | 31491 | PLUG AC INLET TWO PHASE NOISE FILTER |
| | ZF7117 | SPK.CABLE ASSY 4R/5W(MAX) 30" LCD TV |
| | ZF8107-AS | SPEAKER 4R 5W(NOM)/7W(MAX.) 58x165MM |
| | 600303 | TERMINAL BATT.BOX(+-) R/C |
| | 7XB901 | RUBBER CONTACT PURE FLAT COMMON 14.1 |
| | 7XB187-OR | RC COMMON FLAT TYPE 14.1 |

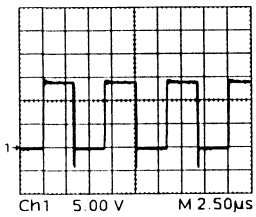
# FREQUENCY TABLE (MHz)

| Channel | Number | BG | I | DK | L/L' |
|---|---|---|---|---|---|
| CH | 1 | | 49.75 | 49.75 | 47.75 |
| CH | 2 | 48.25 | 59.25 | 59.25 | 55.75 |
| CH | 3 | 55.25 | 77.25 | 77.25 | 60.50 |
| CH | 4 | 62.25 | 85.25 | 85.25 | 63.75 |
| CH | 5 | 175.25 | 93.25 | 93.25 | 176.00 |
| CH | 6 | 182.25 | 175.25 | 175.25 | 184.00 |
| CH | 7 | 189.25 | 183.25 | 183.25 | 192.00 |
| CH | 8 | 196.25 | 191.25 | 191.25 | 200.00 |
| CH | 9 | 203.25 | 199.25 | 199.25 | 208.00 |
| CH | 10 | 210.25 | 207.25 | 207.25 | 216.00 |
| CH | 11 | 217.25 | 215.25 | 215.25 | 189.25 |
| CH | 12 | 224.25 | 223.25 | 223.25 | 182.25 |
| CH | 13 | 53.75 | 45.75 | | 196.25 |
| CH | 14 | 62.25 | 53.75 | | 210.25 |
| CH | 15 | 82.25 | 61.75 | | |
| CH | 16 | 175.25 | 69.75 | | |
| CH | 17 | 183.25 | 95.25 | | |
| CH | 18 | 192.25 | | | |
| CH | 19 | 201.25 | | | |
| CH | 20 | 210.25 | | | |
| CH | 21 | 471.25 | 471.25 | 471.25 | 471.25 |
| CH | 22 | 479.25 | 479.25 | 479.25 | 479.25 |
| CH | 23 | 487.25 | 487.25 | 487.25 | 487.25 |
| CH | 24 | 495.25 | 495.25 | 495.25 | 495.25 |
| CH | 25 | 503.25 | 503.25 | 503.25 | 503.25 |
| CH | 26 | 511.25 | 511.25 | 511.25 | 511.25 |
| CH | 27 | 519.25 | 519.25 | 519.25 | 519.25 |
| CH | 28 | 527.25 | 527.25 | 527.25 | 527.25 |
| CH | 29 | 535.25 | 535.25 | 535.25 | 535.25 |
| CH | 30 | 543.25 | 543.25 | 543.25 | 543.25 |
| CH | 31 | 551.25 | 551.25 | 551.25 | 551.25 |
| CH | 32 | 559.25 | 559.25 | 559.25 | 559.25 |
| CH | 33 | 567.25 | 567.25 | 567.25 | 567.25 |
| CH | 34 | 575.25 | 575.25 | 575.25 | 575.25 |
| CH | 35 | 583.25 | 583.25 | 583.25 | 583.25 |
| CH | 36 | 591.25 | 591.25 | 591.25 | 591.25 |
| CH | 37 | 599.25 | 599.25 | 599.25 | 599.25 |
| CH | 38 | 607.25 | 607.25 | 607.25 | 607.25 |
| CH | 39 | 615.25 | 615.25 | 615.25 | 615.25 |
| CH | 40 | 623.25 | 623.25 | 623.25 | 623.25 |
| CH | 41 | 631.25 | 631.25 | 631.25 | 631.25 |
| CH | 42 | 639.25 | 639.25 | 639.25 | 639.25 |
| CH | 43 | 647.25 | 647.25 | 647.25 | 647.25 |
| CH | 44 | 655.25 | 655.25 | 655.25 | 655.25 |

| Channel | Number | BG | I | DK | L/L' |
|---|---|---|---|---|---|
| CH | 45 | 663.25 | 663.25 | 663.25 | 663.25 |
| CH | 46 | 671.25 | 671.25 | 671.25 | 671.25 |
| CH | 47 | 679.25 | 679.25 | 679.25 | 679.25 |
| CH | 48 | 687.25 | 687.25 | 687.25 | 687.25 |
| CH | 49 | 695.25 | 695.25 | 695.25 | 695.25 |
| CH | 50 | 703.25 | 703.25 | 703.25 | 703.25 |
| CH | 51 | 711.25 | 711.25 | 711.25 | 711.25 |
| CH | 52 | 719.25 | 719.25 | 719.25 | 719.25 |
| CH | 53 | 727.25 | 727.25 | 727.25 | 727.25 |
| CH | 54 | 735.25 | 735.25 | 735.25 | 735.25 |
| CH | 55 | 743.25 | 743.25 | 743.25 | 743.25 |
| CH | 56 | 751.25 | 751.25 | 751.25 | 751.25 |
| CH | 57 | 759.25 | 759.25 | 759.25 | 759.25 |
| CH | 58 | 767.25 | 767.25 | 767.25 | 767.25 |
| CH | 59 | 775.25 | 775.25 | 775.25 | 775.25 |
| CH | 60 | 783.25 | 783.25 | 783.25 | 783.25 |
| CH | 61 | 791.25 | 791.25 | 791.25 | 791.25 |
| CH | 62 | 799.25 | 799.25 | 799.25 | 799.25 |
| CH | 63 | 807.25 | 807.25 | 807.25 | 807.25 |
| CH | 64 | 815.25 | 815.25 | 815.25 | 815.25 |
| CH | 65 | 823.25 | 823.25 | 823.25 | 823.25 |
| CH | 66 | 831.25 | 831.25 | 831.25 | 831.25 |
| CH | 67 | 839.25 | 839.25 | 839.25 | 839.25 |
| CH | 68 | 847.25 | 847.25 | 847.25 | 847.25 |
| CH | 69 | 855.25 | 855.25 | 855.25 | 855.25 |
| CH | 70 | | 863,25 | | 863.25 |
| CH | 71 | | 871,25 | | |
| CH | 72 | | 879,25 | | |
| CH | 73 | | 887,25 | | 160.00 |
| CH | 74 | 69.25 | | | 172.00 |
| CH | 75 | 76.25 | | | 220.00 |
| CH | 76 | 83.25 | | | 232.00 |
| CH | 77 | 90.25 | | | 244.00 |
| CH | 78 | 97.25 | | | 256.00 |
| CH | 79 | 59.25 | | | 268.00 |
| CH | 80 | 93.25 | | | 280.00 |
| S | 1 | 105.25 | 103.25 | 103.25 | 116.75 |
| S | 2 | 112.25 | 111.25 | 111.25 | 128.75 |
| S | 3 | 119.25 | 119.25 | 119.25 | 140.75 |
| S | 4 | 126.25 | 127.25 | 127.25 | 152.75 |
| S | 5 | 133.25 | 135.25 | 135.25 | 164.75 |
| S | 6 | 140.25 | 143.25 | 143.25 | 176.75 |
| S | 7 | 147.25 | 151.25 | 151.25 | 188.75 |
| S | 8 | 154.25 | 159.25 | 159.25 | 200.75 |
| S | 9 | 161.25 | 167.25 | 167.25 | 212.75 |
| S | 10 | 168.25 | 231.25 | 231.25 | 224.75 |
| S | 11 | 231.25 | 239.25 | 239.25 | 236.75 |
| S | 12 | 238.25 | 247.25 | 247.25 | 248.75 |
| S | 13 | 245.25 | 255.25 | 255.25 | 260.75 |
| S | 14 | 252.25 | 263.25 | 263.25 | 272.75 |

| Channel | Number | BG | I | DK | L/L' |
|---|---|---|---|---|---|
| S | 15 | 259.25 | 271.25 | 271.25 | 284.75 |
| S | 16 | 266.25 | 279.25 | 279.25 | 296.75 |
| S | 17 | 273.25 | 287.25 | 287.25 | 55.75 |
| S | 18 | 280.25 | 295.25 | 295.25 | 60.50 |
| S | 19 | 287.25 | 303.25 | 303.25 | 63.75 |
| S | 20 | 294.25 | | | |
| S | 21 | 303.25 | | | 303.25 |
| S | 22 | 311.25 | 311.25 | 311.25 | 311.25 |
| S | 23 | 319.25 | 319.25 | 319.25 | 319.25 |
| S | 24 | 327.25 | 327.25 | 327.25 | 327.25 |
| S | 25 | 335.25 | 335.25 | 335.25 | 335.25 |
| S | 26 | 343.25 | 343.25 | 343.25 | 343.25 |
| S | 27 | 351.25 | 351.25 | 351.25 | 351.25 |
| S | 28 | 359.25 | 359.25 | 359.25 | 359.25 |
| S | 29 | 367.25 | 367.25 | 367.25 | 367.25 |
| S | 30 | 375.25 | 375.25 | 375.25 | 375.25 |
| S | 31 | 383.25 | 383.25 | 383.25 | 383.25 |
| S | 32 | 391.25 | 391.25 | 391.25 | 391.25 |
| S | 33 | 399.25 | 399.25 | 399.25 | 399.25 |
| S | 34 | 407.25 | 407.25 | 407.25 | 407.25 |
| S | 35 | 415.25 | 415.25 | 415.25 | 415.25 |
| S | 36 | 423.25 | 423.25 | 423.25 | 423.25 |
| S | 37 | 431.25 | 431.25 | 431.25 | 431.25 |
| S | 38 | 439.25 | 439.25 | 439.25 | 439.25 |
| S | 39 | 447.25 | 447.25 | 447.25 | 447.25 |
| S | 40 | 455.25 | 455.25 | 455.25 | 455.25 |
| S | 41 | 463.25 | 463.25 | 463.25 | 463.25 |

## Ozillogramme / Oscillograms



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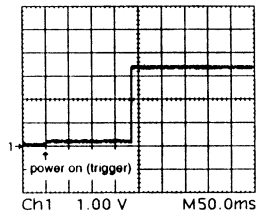

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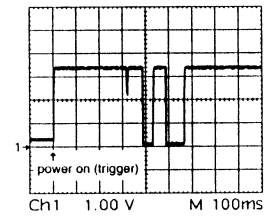

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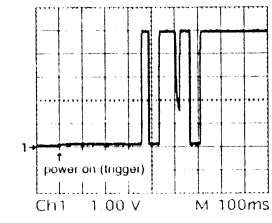

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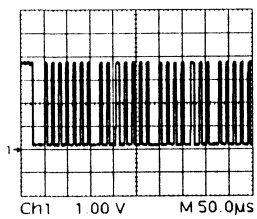

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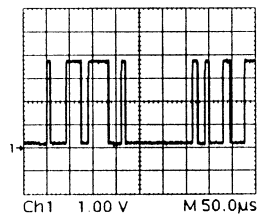
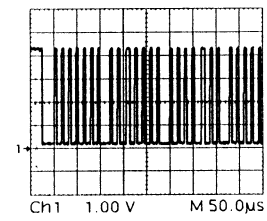
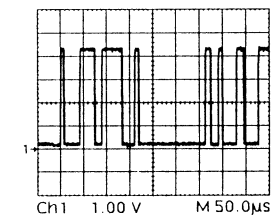


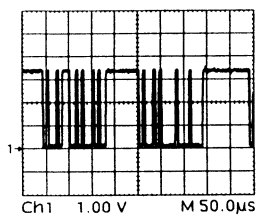
⑥



⑦



⑧



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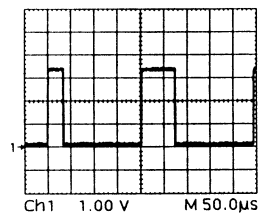

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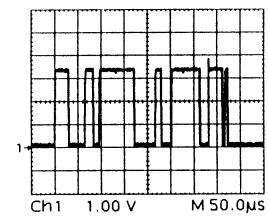

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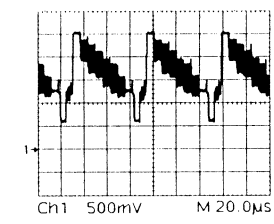

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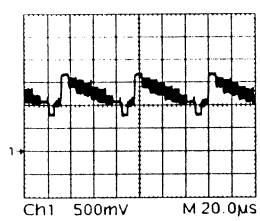

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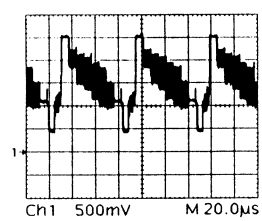

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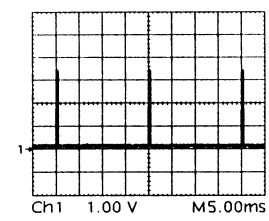

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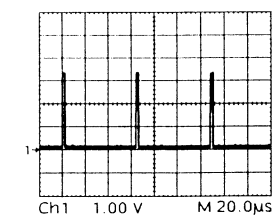

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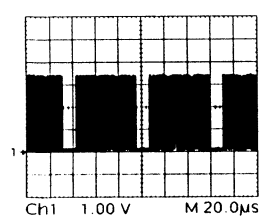

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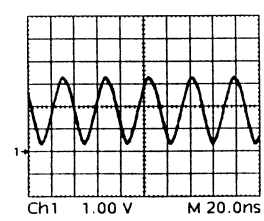

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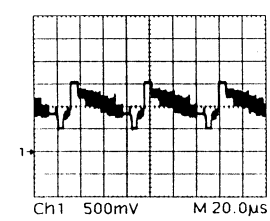

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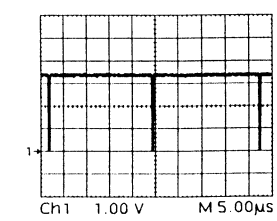

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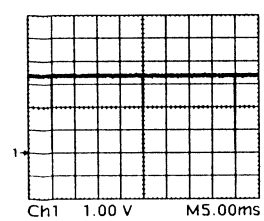

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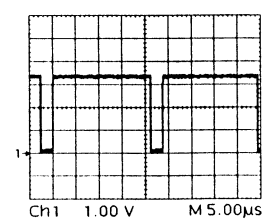

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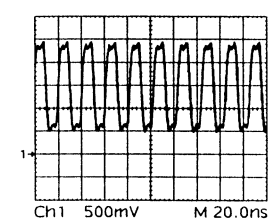

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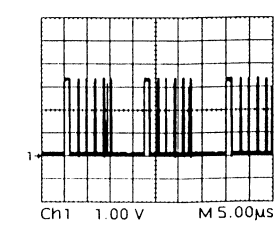

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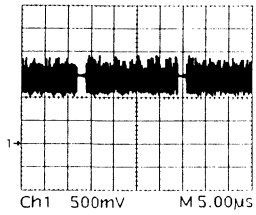


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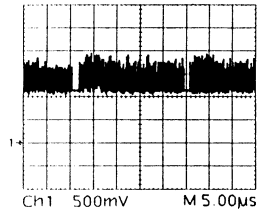


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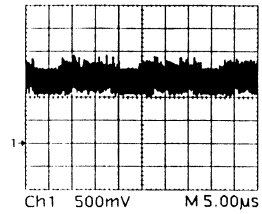


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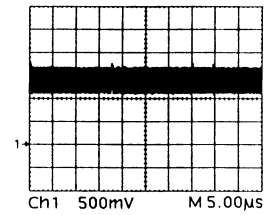


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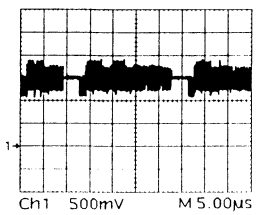


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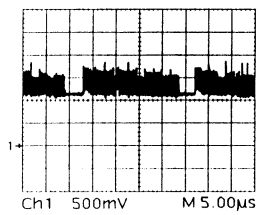


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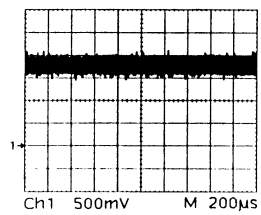


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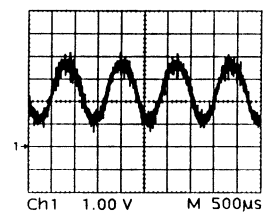


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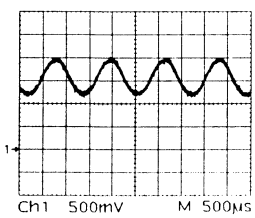
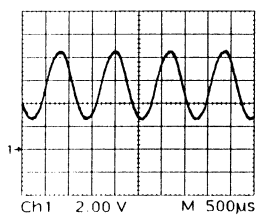
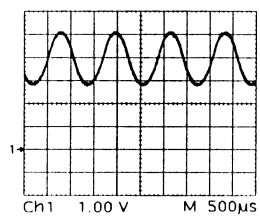


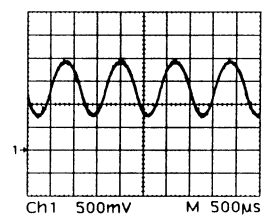

(33) Volume 75%



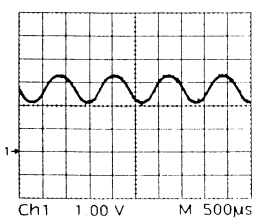

(34) Volume 75%




(35)

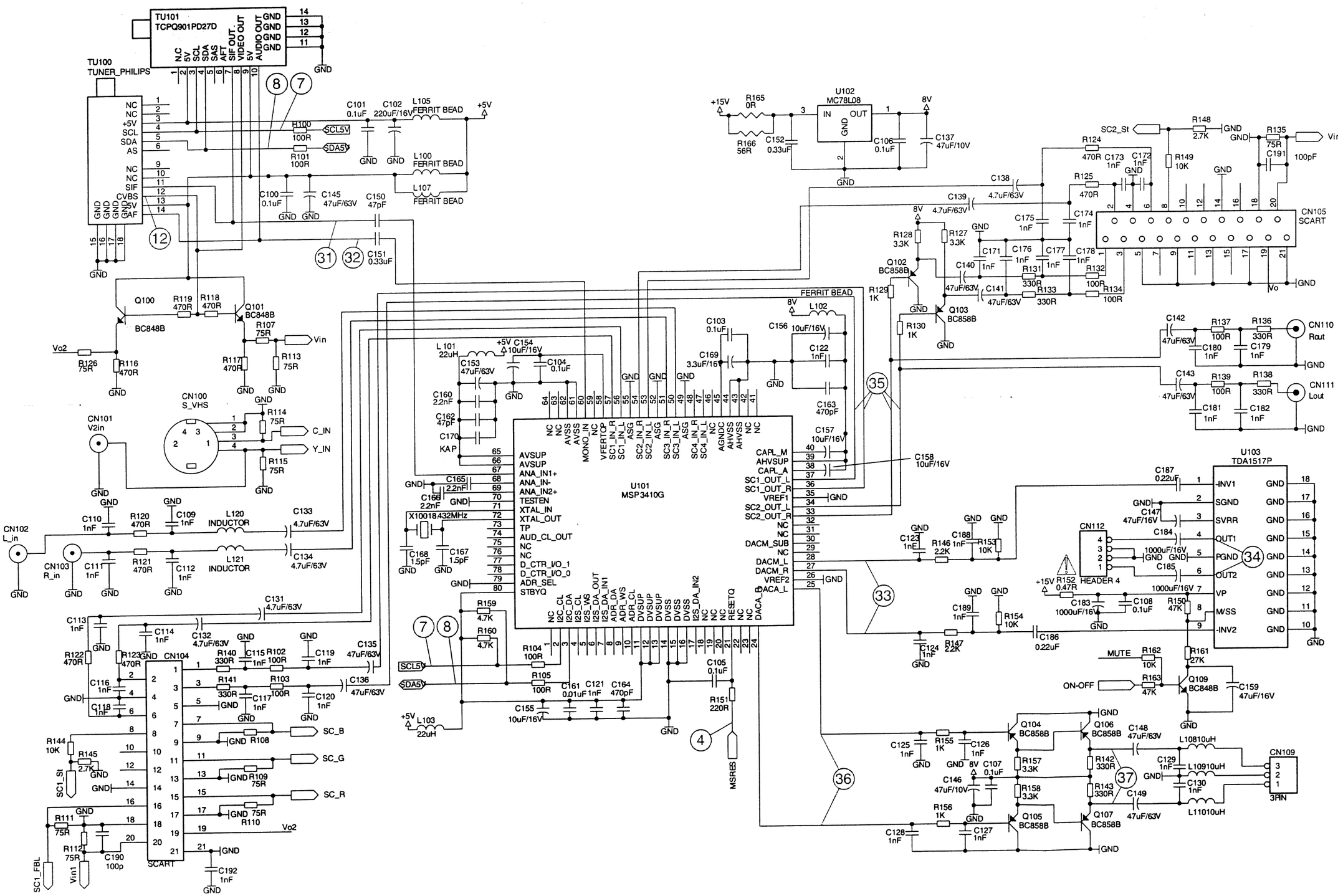


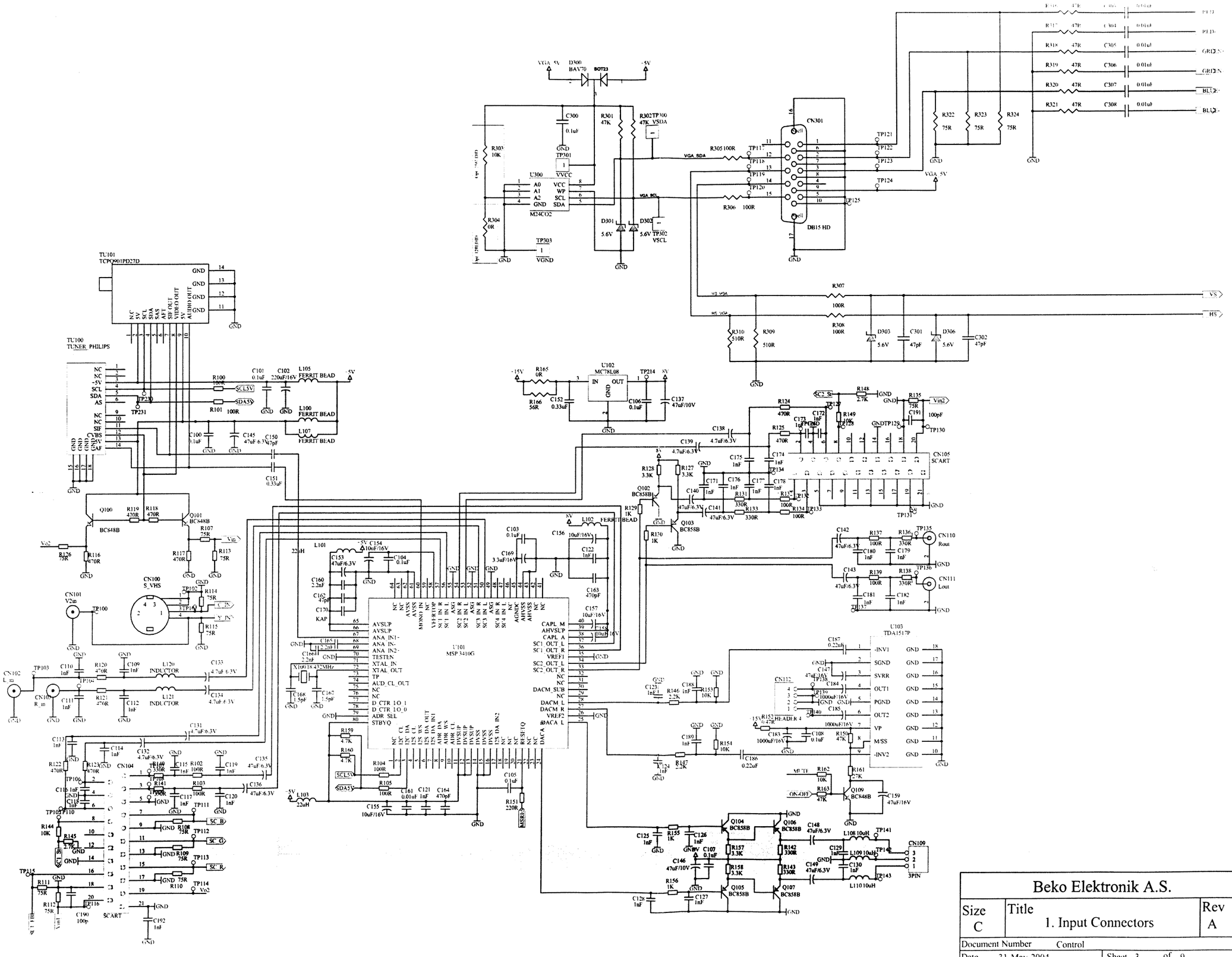

(36) Headphone Volume 75%




(37) Headphone Volume 75%

# Hauptplatte / Main Board – IN/OUT

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TU100
TUNER PHILIPS
U101
MSP 3410G
U102
MC78L08
U103
TDA1517P
CN301
DB15 HD
CN105
SCART
CN100
S_VHS
CN104
SCART
CN102
L_in
CN103
R_in
CN101
V2in
CN110
Rout
CN111
Lout
CN109
3PIN
D300
BAV70
SOT23
D301
5.6V
D302
5.6V
D303
5.6V
D306
5.6V
VGA_SDA
VGA_SCL
SCL5V
SDA5V
VS
HS
Vin1
Vin2
Vo1
Vo2
M24C02
TDA1517P
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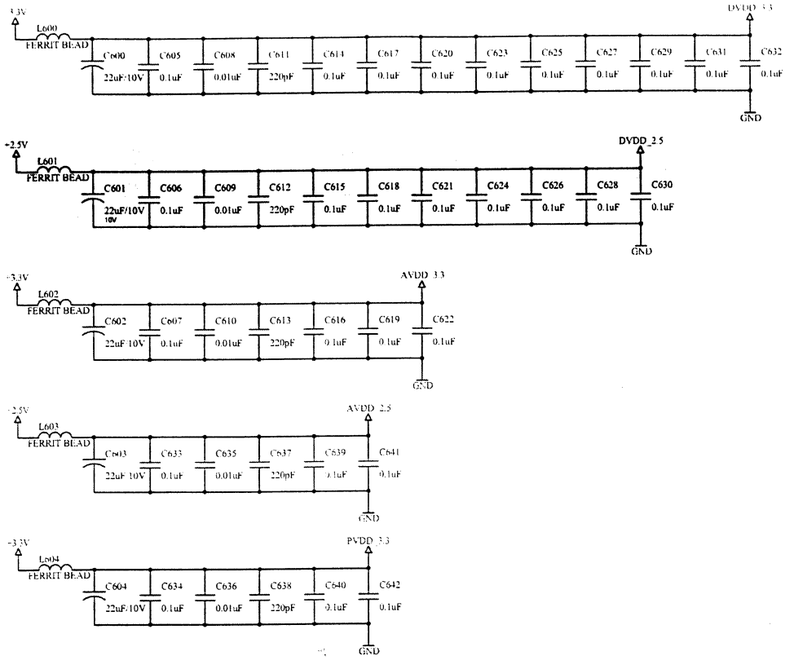


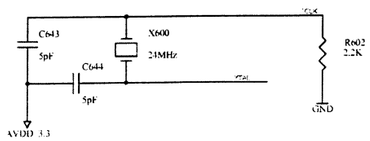


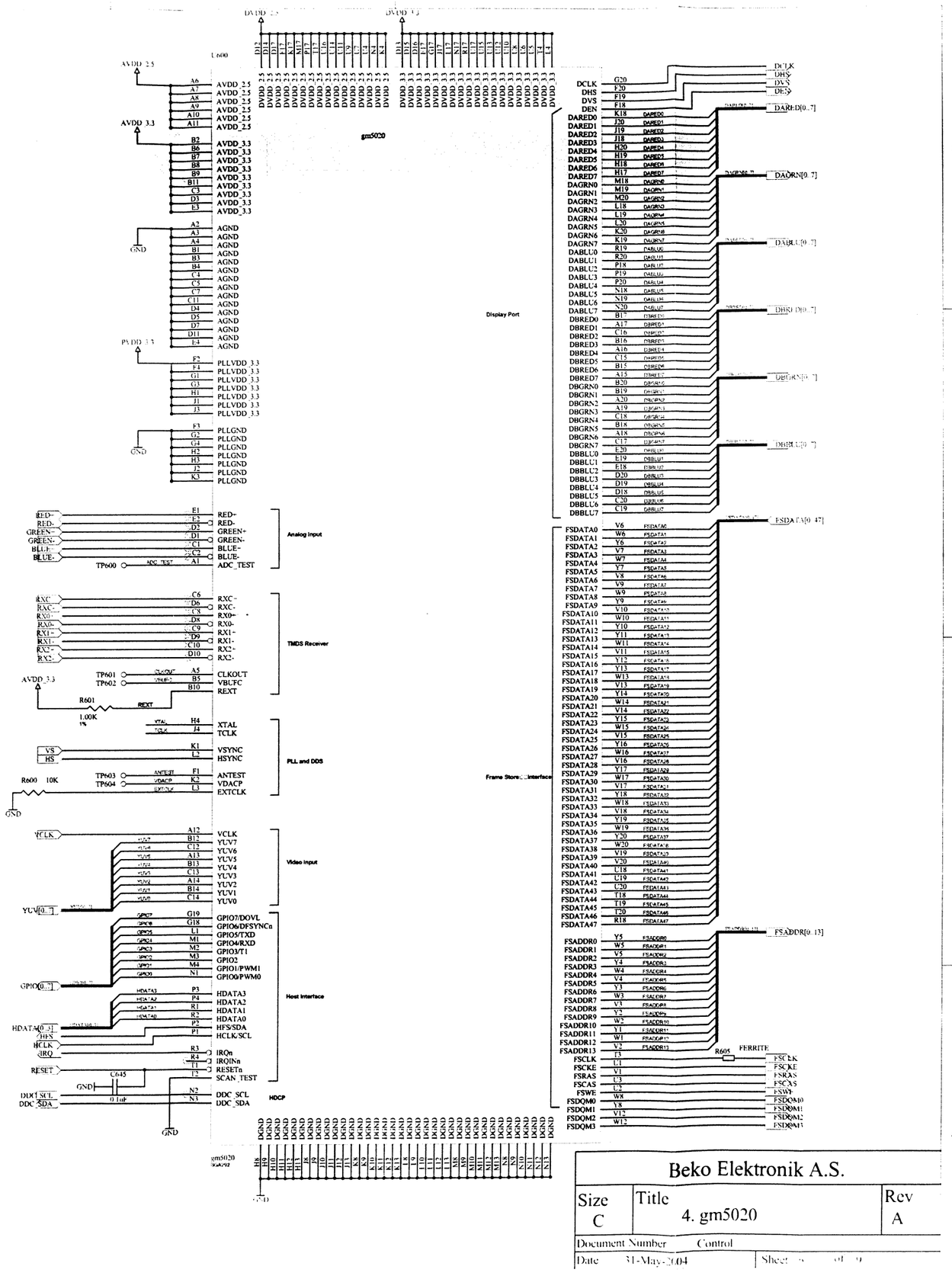


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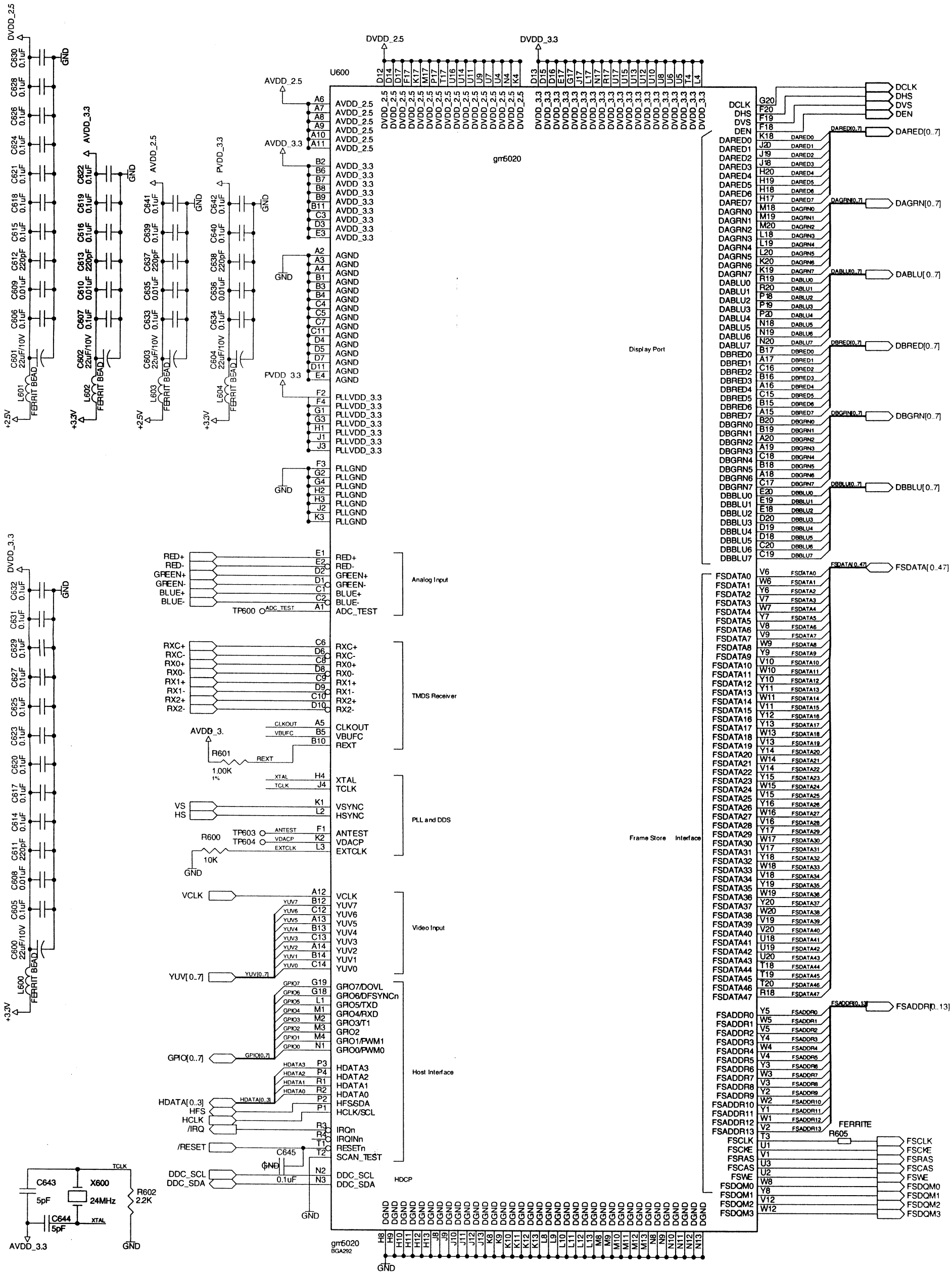
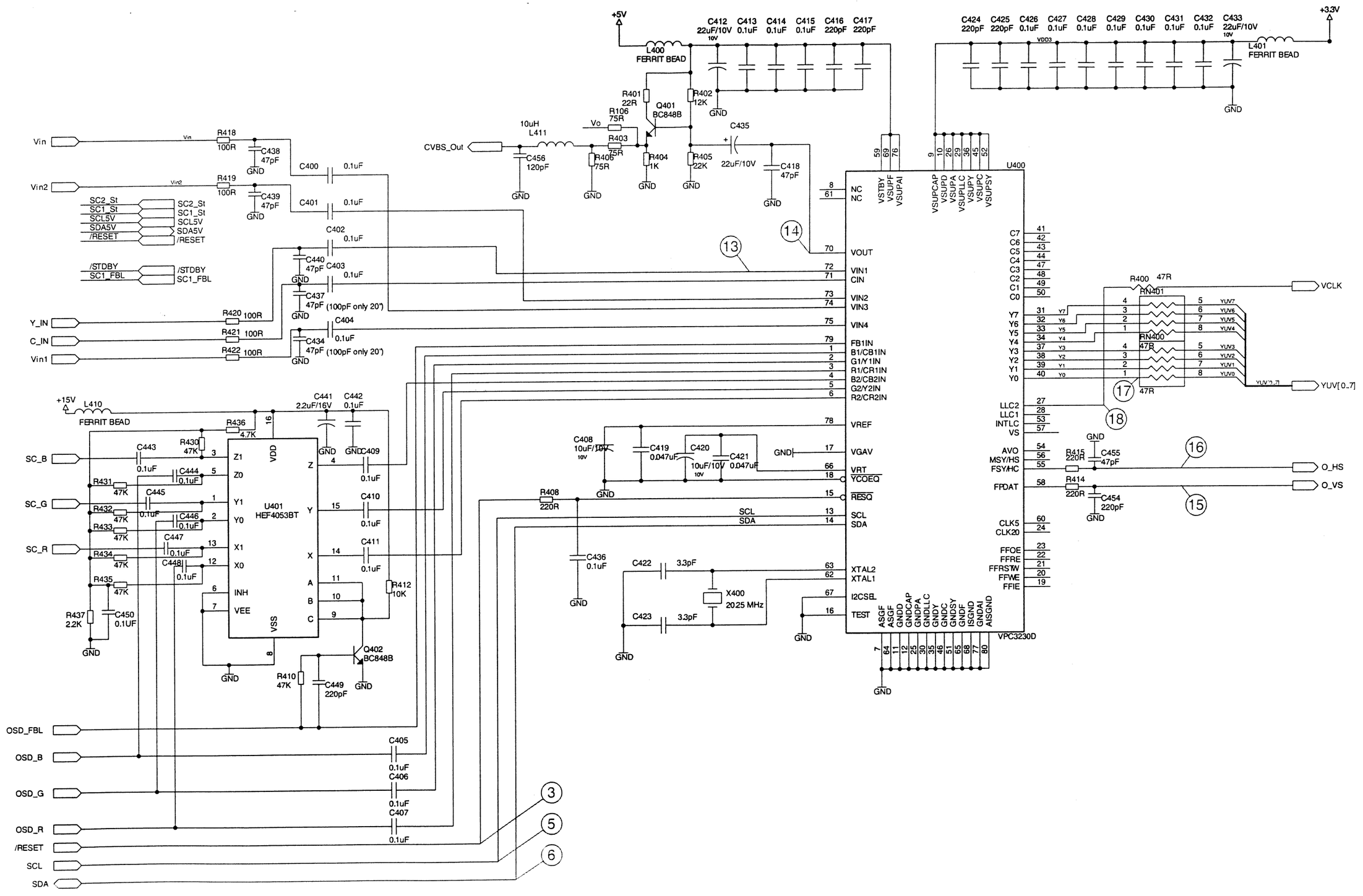
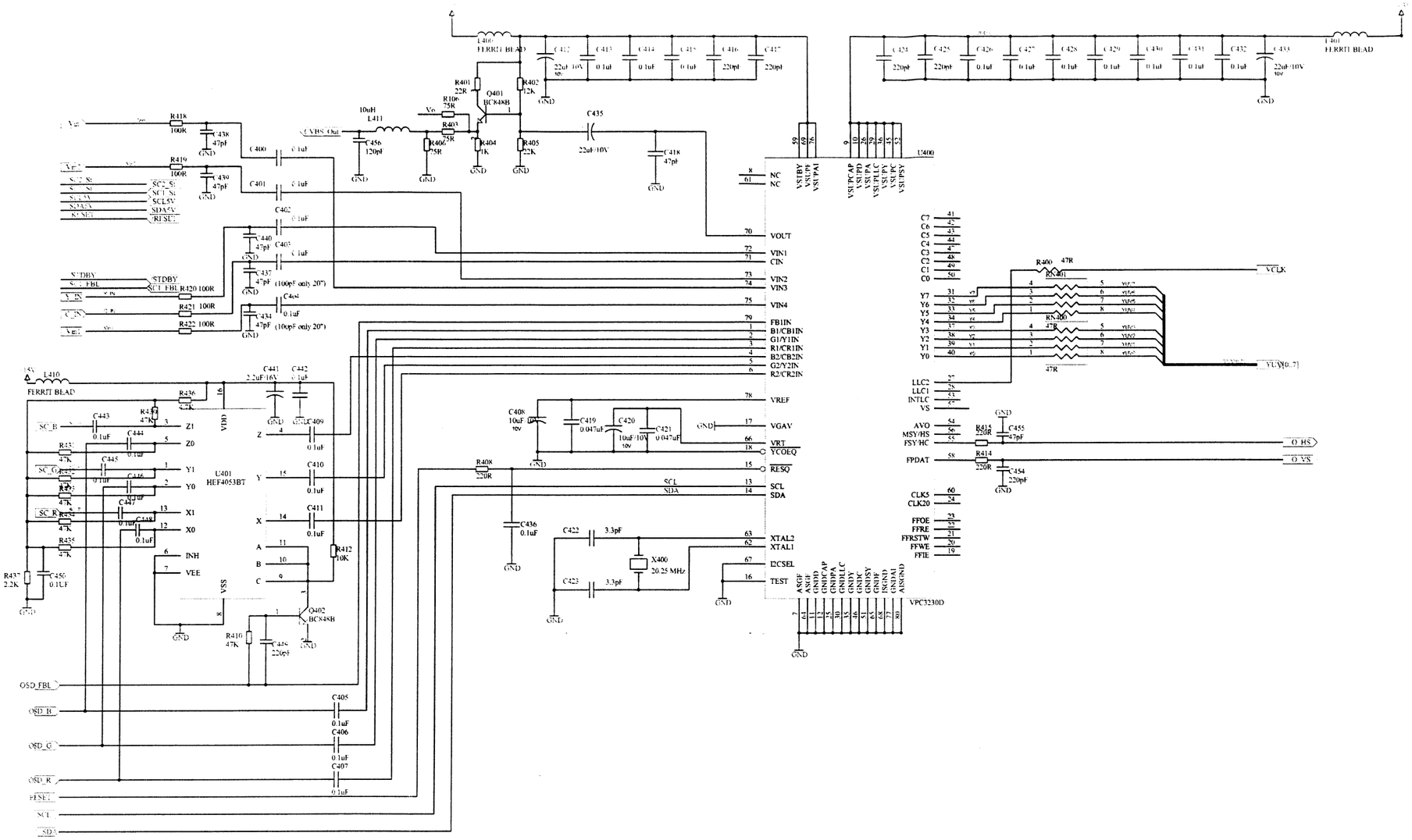
# Hauptplatte / Main Board – Scaler



# Hauptplatte Video-Konverter / Main Board – Video Converter




Chassis L4

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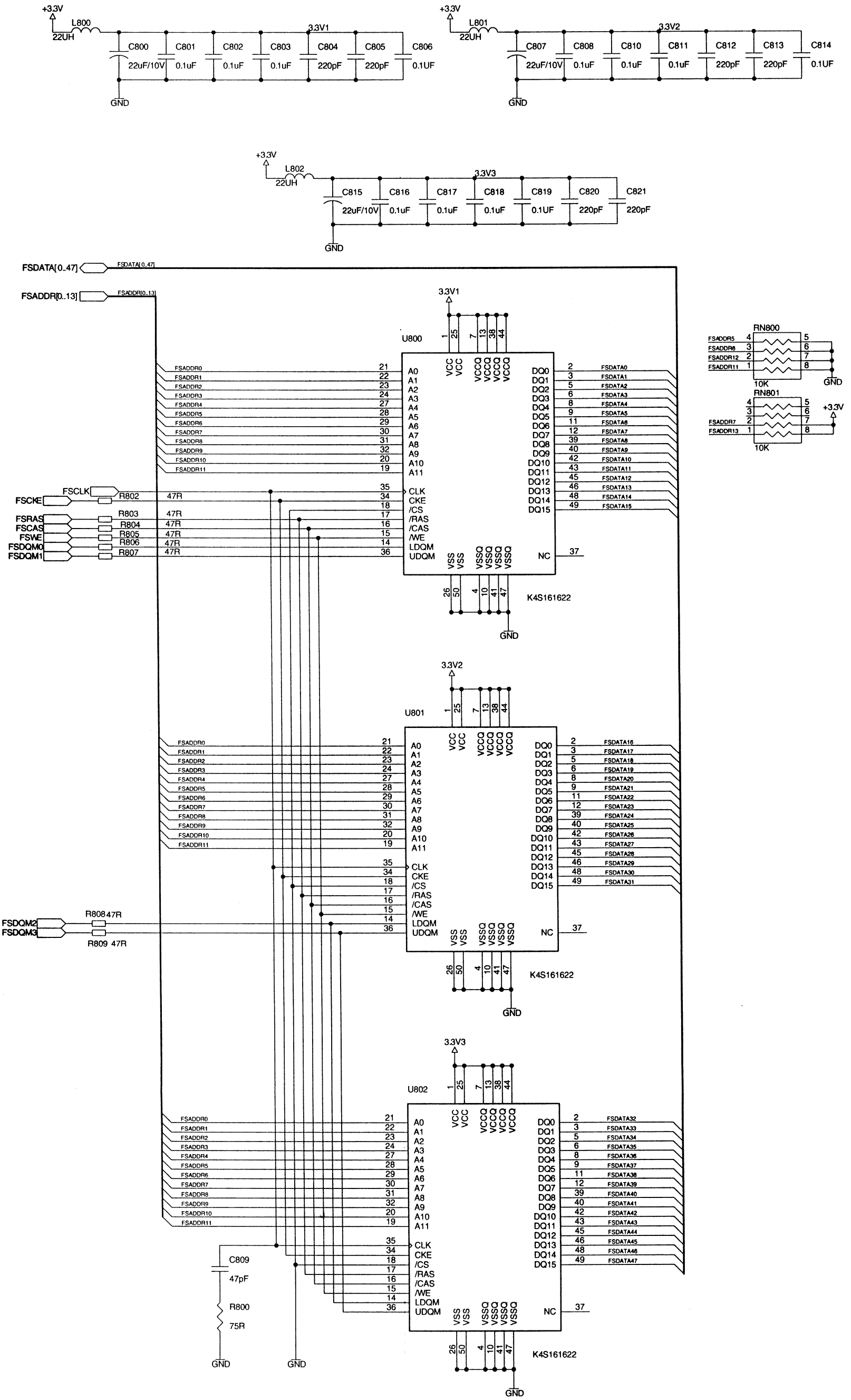
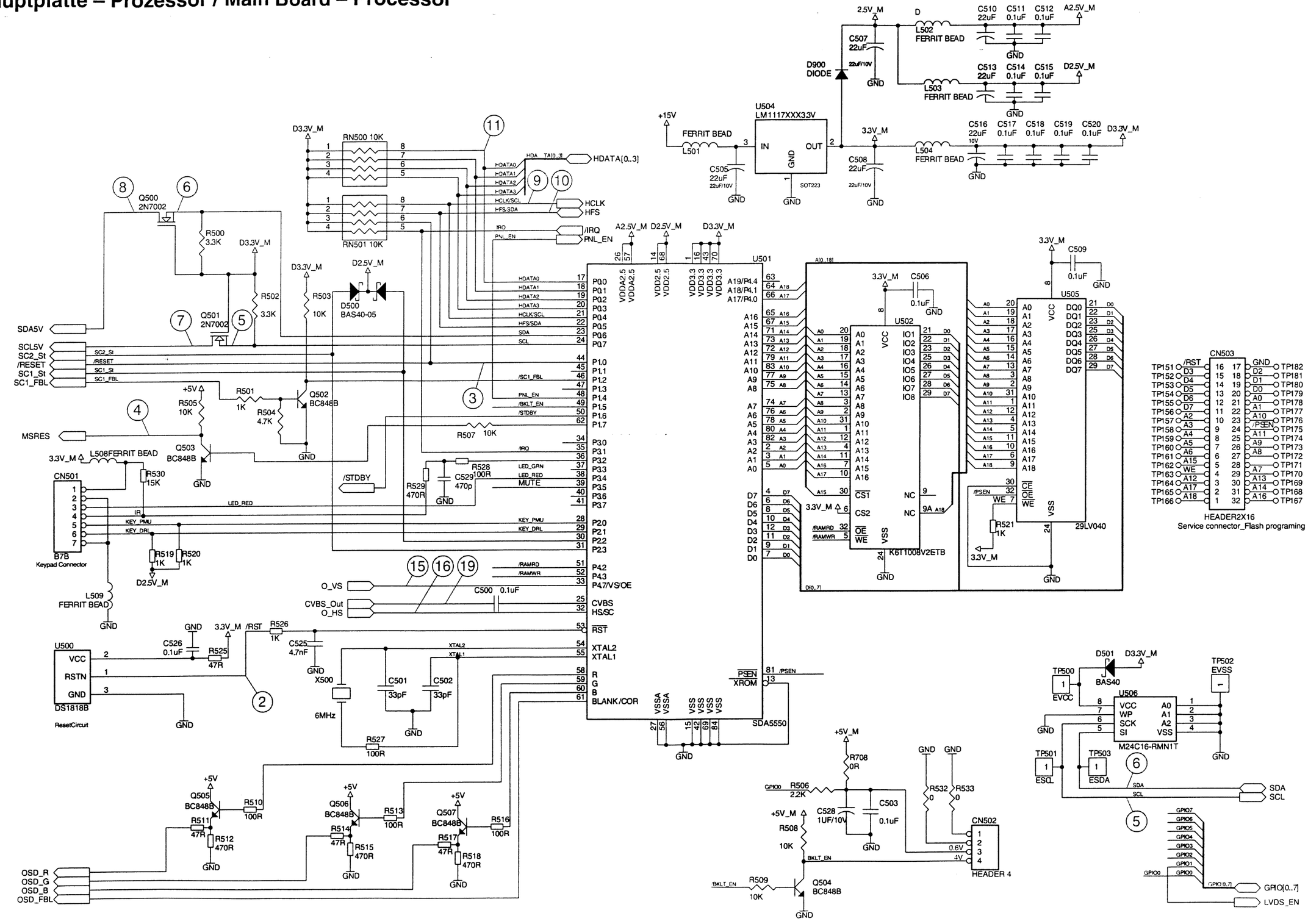
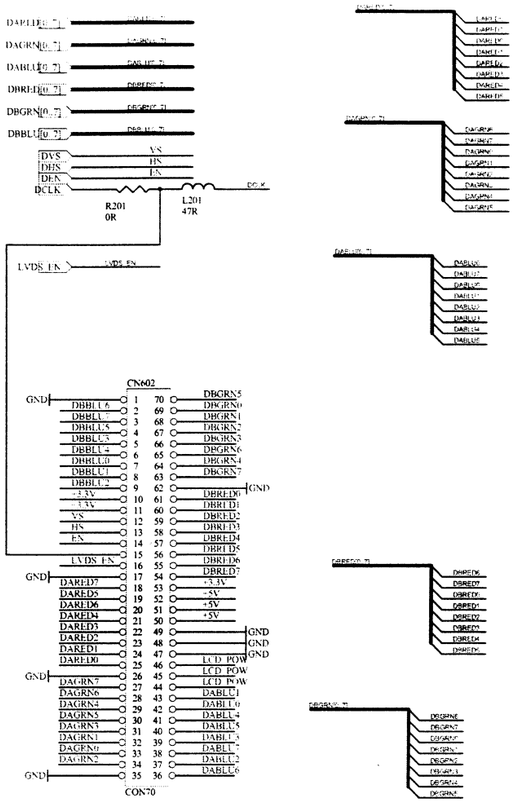
# Hauptplatte – Speicher / Main Board – Memory



# Hauptplatte – Prozessor / Main Board – Processor



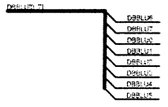


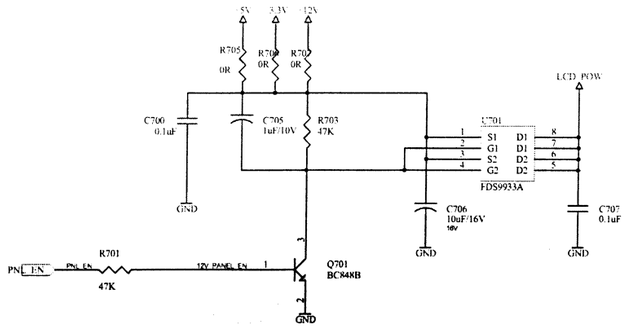


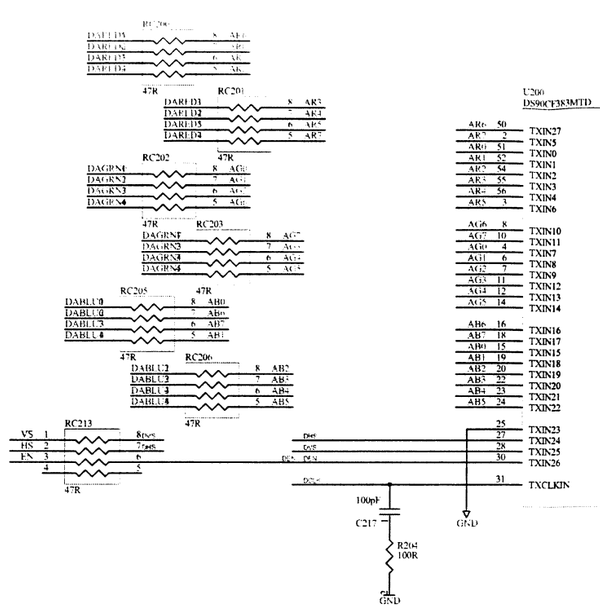


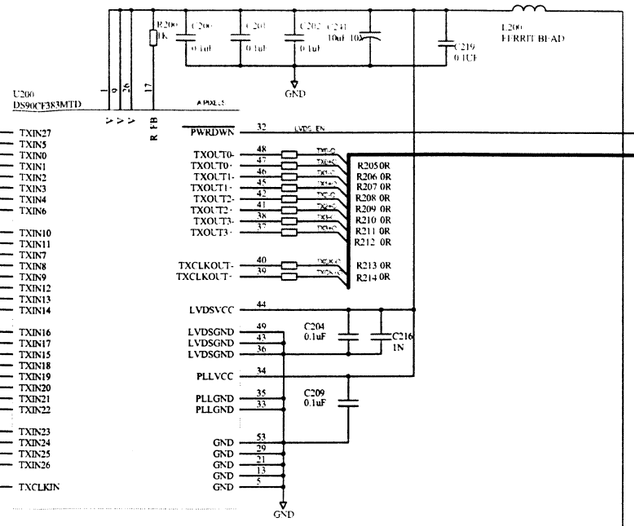


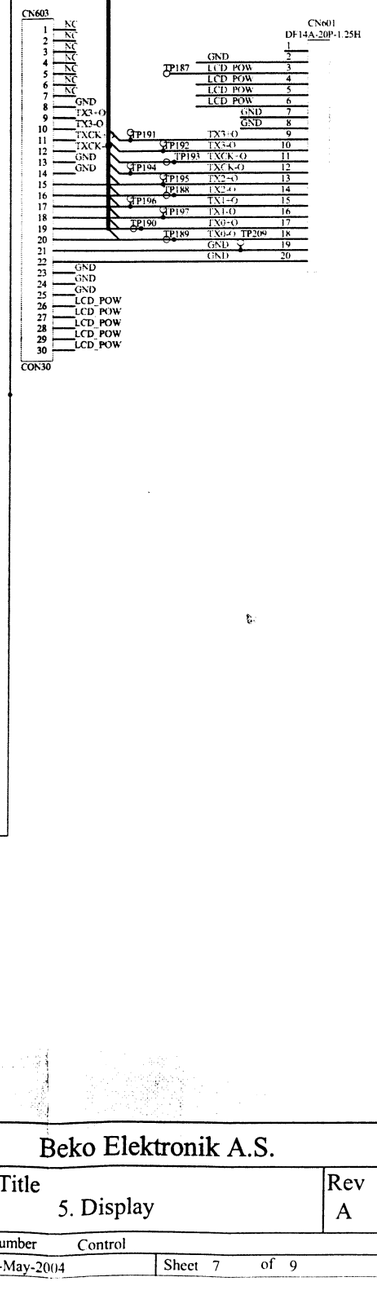


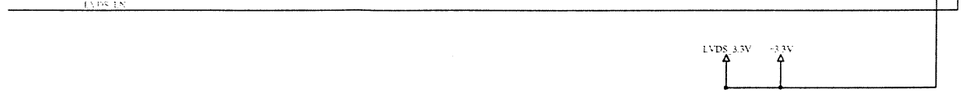









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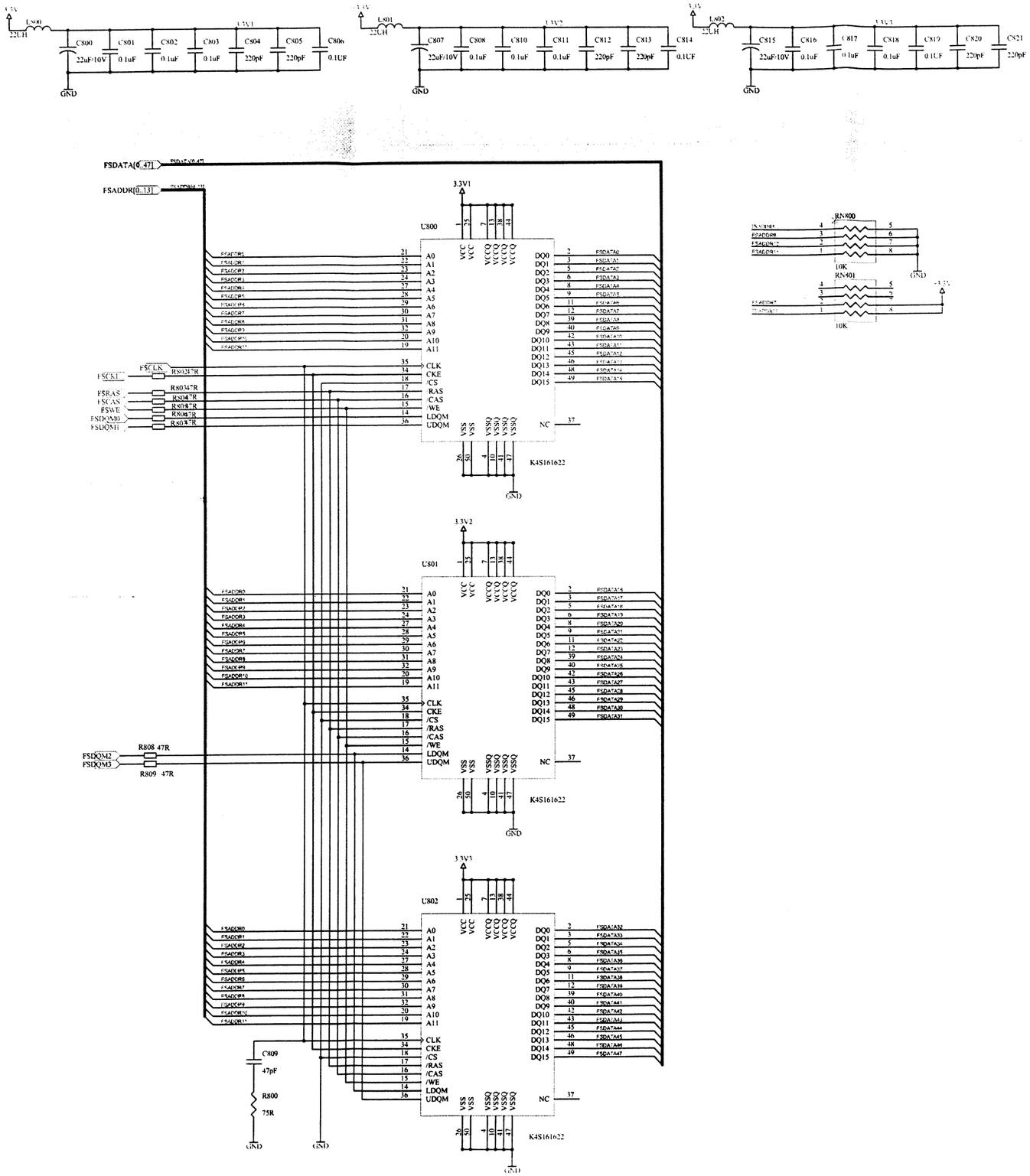


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| Document Number Control | | |
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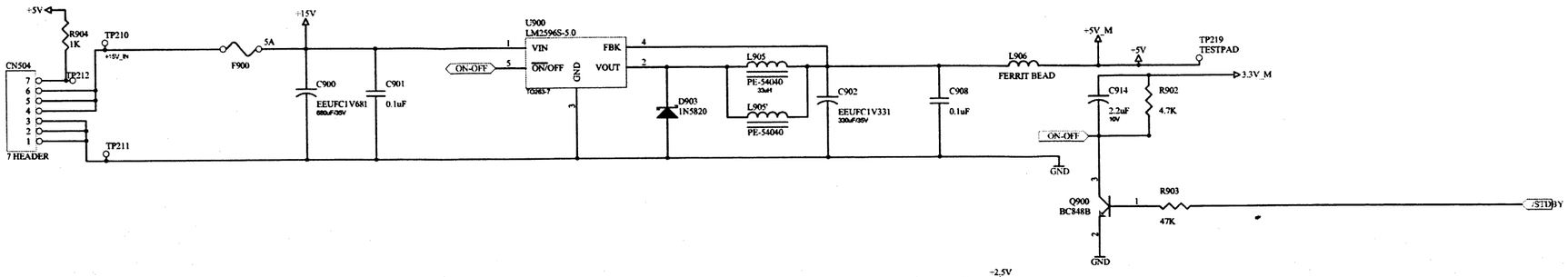


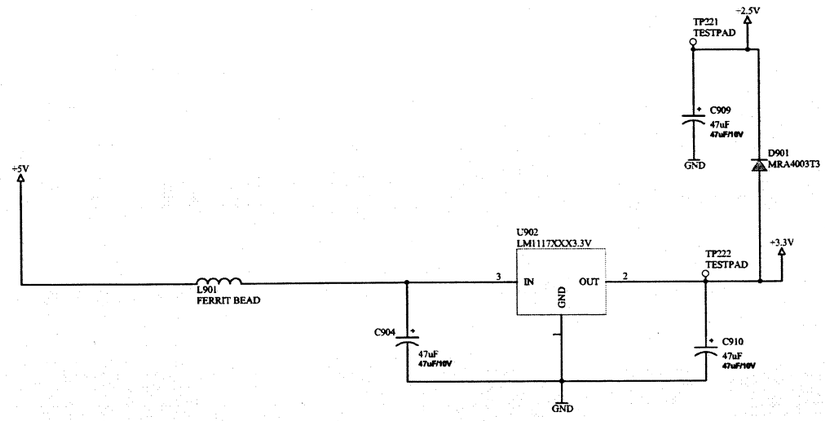


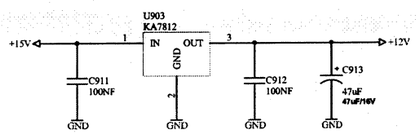


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| Beko Elektronik A.S. | | |
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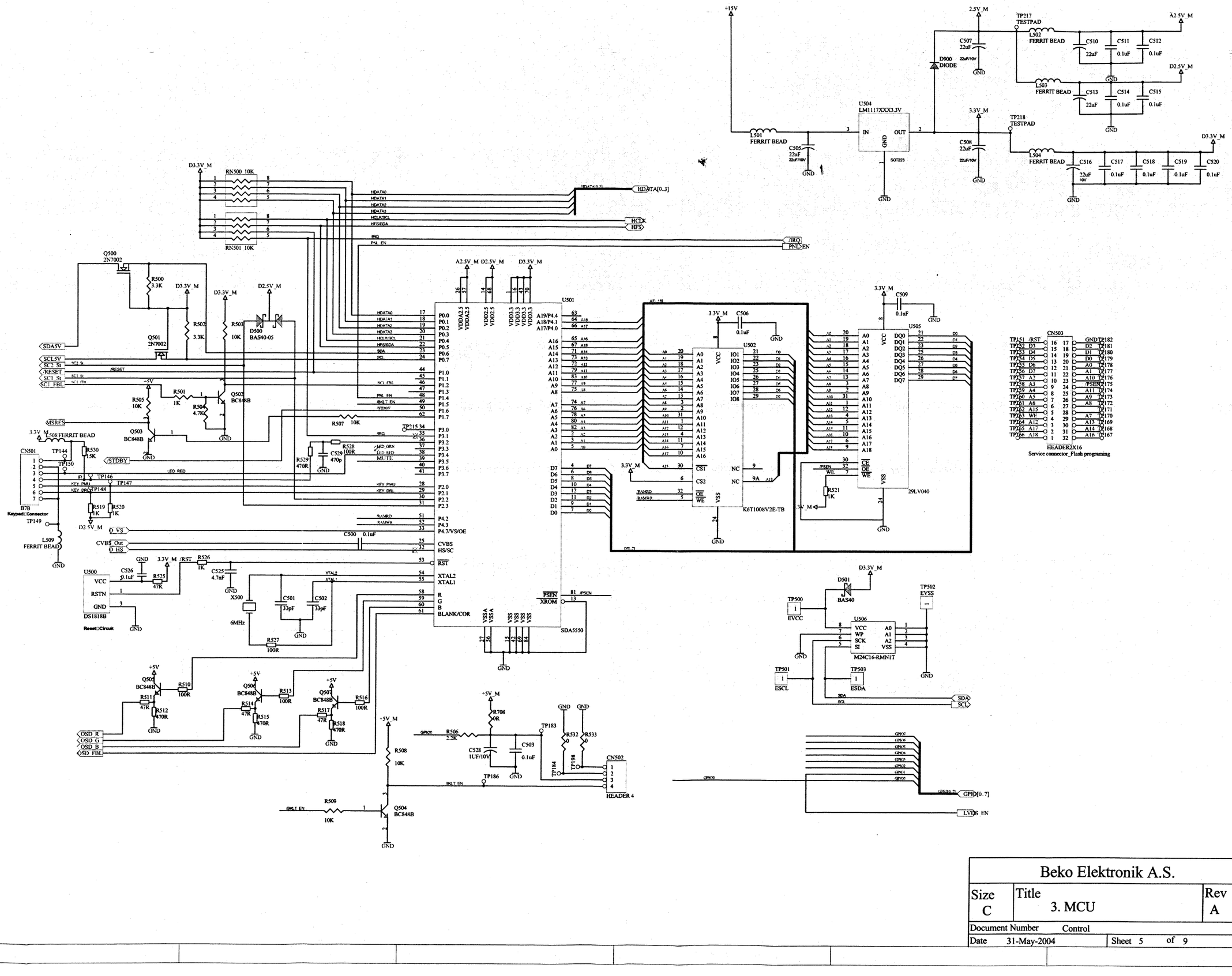
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TP217
TESTPAD
A2.5V_M
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D900
DIODE
L502
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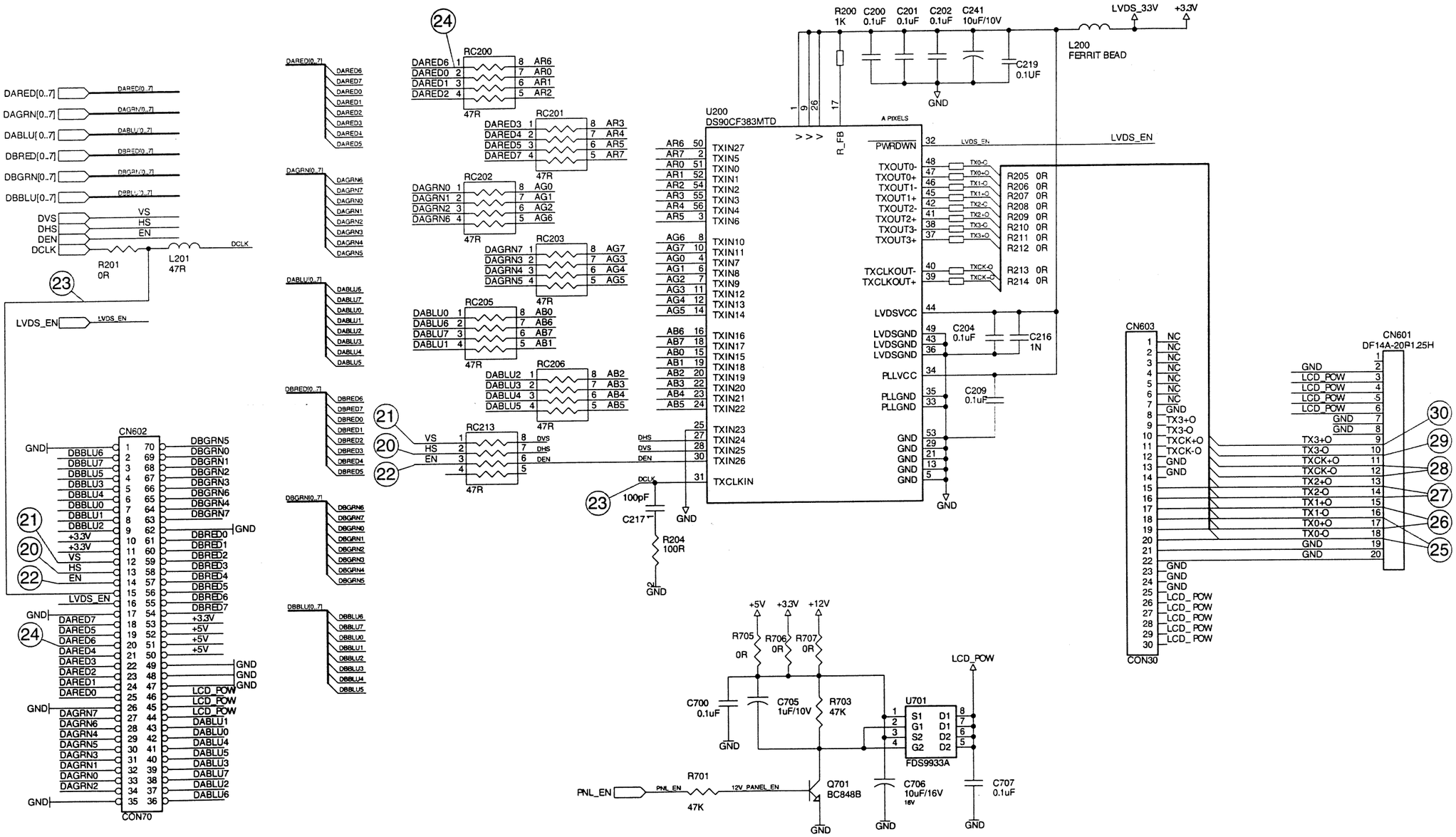
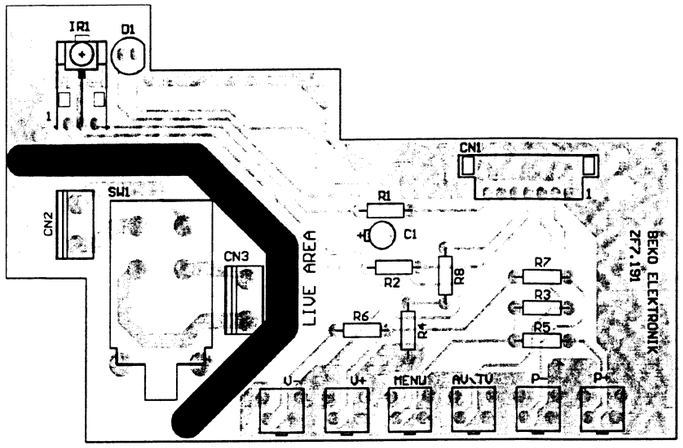
C510
C511
C512
22uF
0.1uF
0.1uF
D2.5V_M
L503
FERRIT BEAD
C513
C514
C515
U504
LM1117XXX3.3V
IN
GND
OUT
SOT223
3.3V_M
TP218
TESTPAD
L501
FERRIT BEAD
C505
22uF
C508
22uF
D3.3V_M
L504
FERRIT BEAD
C516
C517
C518
C519
C520
0.1uF
RN500 10K
RN501 10K
HDATA[0..3]
HCLK
HFS
/IRQ
PNL_EN
Q500
2N7002
R500
3.3K
Q501
2N7002
R502
3.3K
R503
10K
D500
BAS40-05
SDA5V
SCL5V
SC2_St
/RESET
SC1_St
SC1_FBL
R505
10K
R501
1K
Q502
BC848B
R504
4.7K
MSRES
Q503
BC848B
R508
FERRIT BEAD
TP144
R530
15K
TP150
TP146
TP147
TP148
/STDBY
R519
1K
R520
1K
B7B
Keypad□Connector
TP149
L509
FERRIT BEAD
R507
10K
R528
100R
R529
470R
C529
470p
LED_GRN
LED_RED
MUTE
KEY_PMU
KEY_DSL
D2.5V_M
O_VS
O_HS
CVBS_Out
C500
0.1uF
U500
DS1818B
Reset□Circuit
VCC
RSTN
GND
C526
0.1uF
R525
47R
R526
1K
C525
4.7nF
X500
6MHz
C501
33pF
C502
33pF
R527
100R
/RST
XTAL2
XTAL1
R
G
B
BLANK/COR
/PSEN
XROM
SDA5550
U501
A2.5V_M
D2.5V_M
D3.3V_M
VDDA2.5
VDDA1.5
VDD2.5
VDD3.3
P0.0
P0.1
P0.2
P0.3
P0.4
P0.5
P0.6
P0.7
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P3.0
P3.1
P3.2
P3.3
P3.4
P3.5
P3.6
P3.7
P2.0
P2.1
P2.2
P2.3
P4.2
P4.3
P4.7/VS/OE
HS/SC
RST
XTAL2
XTAL1
A19/P4.4
A18/P4.1
A17/P4.0
U502
K6T1008V2E-TB
3.3V_M
C506
0.1uF
/RAMRD
/RAMWR
U505
29LV040
C509
0.1uF
R521
1K
CN503
HEADER2X16
Service connector_Flash programing
U506
M24C16-RMN1T
D501
BAS40
TP500
EVCC
TP502
EVSS
TP501
ESCL
TP503
ESDA
SDA
SCL
OSD_R
OSD_G
OSD_B
OSD_FBL
Q505
BC848B
Q506
BC848B
Q507
BC848B
R510
100R
R511
47R
R512
470R
R513
100R
R514
47R
R515
470R
R516
100R
R517
47R
R518
470R
+5V_M
R708
0R
R506
2.2K
C528
1UF/10V
C503
0.1uF
TP183
TP184
TP186
TP198
R532
0
R533
0
CN502
HEADER 4
R509
10K
Q504
BC848B
GPIO[0..7]
LVDS_EN
Beko Elektronik A.S.
Size
C
Title
3. MCU
Rev
A
Document Number
Control
Date
31-May-2004
Sheet 5 of 9

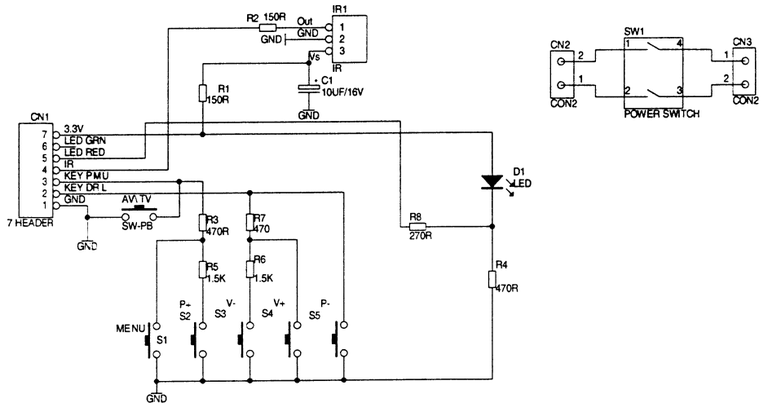
# Hauptplatte – Display-Treiber / Main Board – Display Driver



## Bedieneinheit / Keyboard

Ansicht von der Bestückungsseite / View of Component Side







## Kopfhörer-Platte / Headphone Board

Ansicht von der Bestückungsseite / View of Component Side